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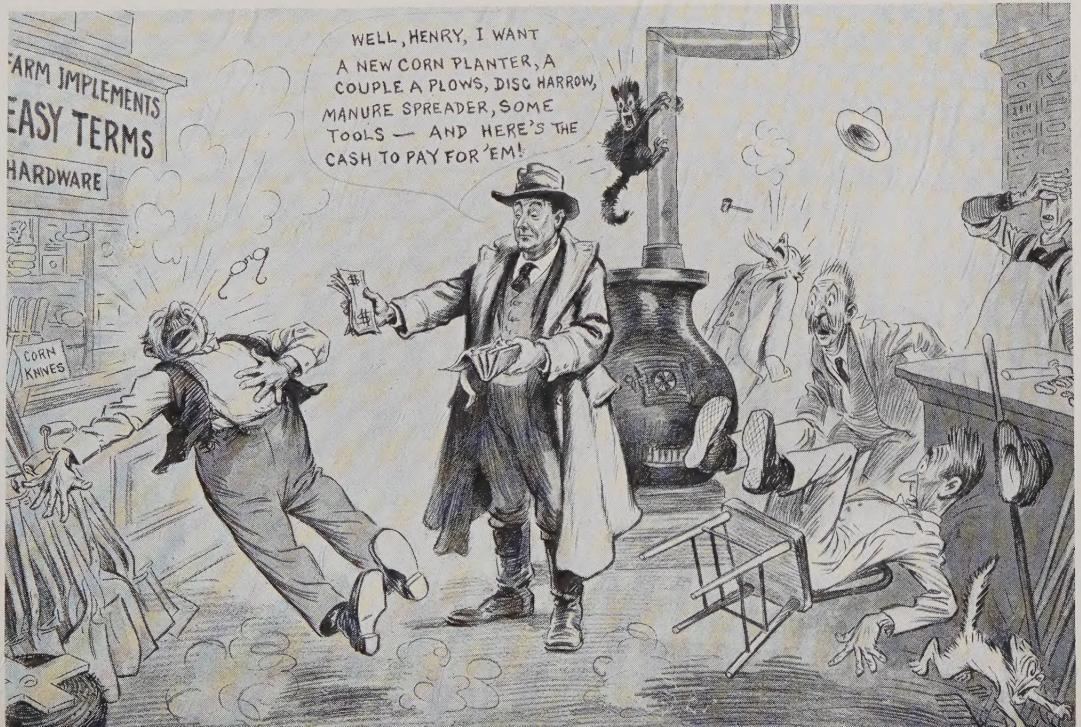
WELL, HENRY, I WANT A NEW CORN PLANTER, A COUPLE A PLOWS, DISC HARROW, MANURE SPREADER, SOME TOOLS — AND HERE'S THE CASH TO PAY FOR 'EM!
FARM IMPLEMENTS
EASY TERMS
HARDWARE
CORN KNIVES

The Tractor

and its influence upon the agricultural implement industry

By BARTON W. CURRIE
Of the Editorial Staff of
The Country Gentleman

A reprint of a series of articles which appeared in The Country Gentleman

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FOREWORD

THIS IS, we believe, the first complete story of that vast business, the manufacture and sale of agricultural implements and farm tractors. It first appeared serially in THE COUNTRY GENTLEMAN.

To the business farmer, implements and machinery are of primary importance. It was as a part of its service to the progressive farmer that THE COUNTRY GENTLEMAN undertook the task of gathering and presenting this material.

THE COUNTRY GENTLEMAN is peculiarly the publication of the business farmer. It is national, it is weekly, it covers the entire country. It touches on all crops and all agricultural topics, and always from the point of view of the man who farms to get back out of the land more than he puts into it.

Within the past year there have been two developments which have

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made it more important than ever that all the facts about this implement industry be brought together and given thorough consideration.

One is the rapid development of the farm tractor, which is having considerable effect upon methods of manufacturing and selling all implements.

The other is the increased agitation for shorter retail credits, a reform which would have far-reaching effect upon the implement dealer and the service which he renders to the farmer.

It has been the purpose of THE COUNTRY GENTLEMAN to treat these vital topics in such way as to assist toward a wider and more economical distribution of farm machinery.

THE CURTIS PUBLISHING COMPANY

Philadelphia, June, 1916

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I

On Time

MILLIONS in junk on the farms of America. Waste millions! Who's to blame? The farmer, partly—but not wholly. The man who made these miracle-working implements that have been cast on the scrap-pile long before their time must shoulder his share of responsibility. Not so much because of the way he contrived these wonder-tools as because of the way he sold them.

Let us focus on one of innumerable cases. Here's Farmer Jim Average Jones; a rather likely looking place he's got, but what about that pile of junk in the barnyard?

Once it was a mower. It came up from the dealer's looking like a bridegroom. Ma and the kids came out and shaded their eyes from the glare of the paint.

Now look at it—and it has just been paid for! The junk-man is coming up tomorrow in that spring-halt old wagon of his to carry it off to his scrap-iron cemetery. He'll trade in a new cookstove for it, and next spring Jim Average Jones will go down to the dealer's and get a new mower.

That's all he cares about it. That poor old mower is the product of a great industry, but that doesn't seem to interest Jim.

The American farmer buys a plow or a planter or a corn sheller or a mower or a side-delivery rake or a silage cutter. It works to his satisfaction or it doesn't. He got it from the dealer on credit, and in the course of time he *may* pay for it.

As the majority of farmers size up the farm implement industry, tools either work or don't work. If they work the incident is closed, and in the course of time the farmer pays for them. Generally he pays for them after all the shiny paint and gaudy veneer have worn off—not a great while before Bill Binks, the junkman, comes round to trade a new cookstove for it. It looks so cheap and scrappy when Binks carts it off that the farmer is naturally sore at having to pay for it as if it were new.

But the honest farmer pays for it, nevertheless, after he has cashed in his crop, and the dealer in turn pays the manufacturer. The manufacturer in his turn buys some more raw material with which to manufacture other implements.

The sort of purchaser who has had good service from his tools doesn't give a thought to the manufacturer or his problems or his troubles. To him the source of production is some indefinite nowhere just as vague as the mythical workshop of Santa Claus. The other sort of purchaser, who has bought shoddy equipment that didn't work, or just fairly good stuff that was not sufficiently foolproof, as the manufacturer would say, does give a thought or two to the source of production. He whines that he has been stung, gouged, robbed by a trust or some little cousin of a trust. He takes his howl to the dealer and tells him he'll be darned if he'll

pay. He calls the dealer names and the dealer retorts. It was an open-account transaction, and the dealer has no documentary proof of purchase. They bicker and threaten each other and at last they go to law about it. In the course of the suit the dealer may go bankrupt and the farmer may move. The lawyers in the case have their fees and that is all the real money that passes. All the manufacturer gets out of it is a few vain regrets.

Indeed, the manufacturer doesn't appear in the matter save as a remote greedy monster who turns out tools from some smoky urban lair. The defendant's lawyer may draw a caricature of him and embellish it with lurid misrepresentations. Nor does the dealer's counsel make kindly mention of the manufacturer. It is a case of the poor downtrodden farmer versus the just-as-poor downtrodden dealer. The manufacturer has no definite shape in the matter. He isn't familiar enough to anybody to be known by his first, middle, or family name. He really doesn't exist, so why bother about him?

The American farmer is buying some $200,000,000 worth of farm tools a year, and it is estimated that our farms are today stocked with about a billion and a half dollars' worth of implements. They are the best farm implements manufactured on the globe. They represent Yankee ingenuity at its highest, revolutionizing Yankee ingenuity. The evolution of our farm implements has accomplished one of the marvels of two centuries. In 1830 we expended three hours and three minutes of human labor to produce one bushel of wheat. Now, thanks to mechanized efficiency, we cut

the fundamental processes of production down to approximately eight minutes per bushel.

Every farmer who has sat in at a farm-implement lecture has heard this. In recent years the achievement has been vitalized on the moving-picture screen. First you are shown an undernourished, bullet-headed ninety-nine per cent naked Egyptian or Syrian fellah guiding a vest-pocket wooden plow over the dirt and scratching up an inch or so of soil from beneath the surface. This pitiable prehistoric chap is plowing at the rate of an acre or so a fortnight, and in the course of time he will cut by hand about eight bushels—if the gods are kind—of wheat, and a little later you will see his grandmother, his mother, his wife and all the kith and kin that swarm the family hut threshing out the grain with some things that resemble slapsticks. Still later you will see them milling it in stone cuspidors and then concocting it into loaves of durable and enduring bread.

Having marveled at a reel or so of this you next glimpse the modern tractor and gang-plows at work on the virgin prairies, followed by harvesters, binders, threshers, and so on. There is a baffling array of machinery, each separate contrivance performing its ingenious function, cutting labor costs and raising the vocation of the farmer from the slavish drudgery of the days of peasant serfdom to the dignity of a scientific or professional calling.

At least, so you may read the pictures if you are endowed with imagination. It is a skillful selling argument and it is a page of American history that is mighty important to understand. It is the secret of

why the man power of the American farmer is higher than the man power of any other farmer in the world, not excepting the European farmers with their methods of intensive farming.

The Europeans may throw us into total eclipse when it comes to the employment of thrift and the exercise of self-denial, but when it comes to gaiting 150-acre and 500-acre farms they simply have to trail and take our dust. The whyfor of this takes us back to the Deeres and Olivers, the McCormicks and Deerings, just to mention a few names engraved high on the tablet in the hall of fame of the farm-implement industry. They were the Watts and Stephensons and Edisons of American agriculture, and it might be well for the farm boy to learn something from his schoolbooks concerning what they accomplished in the way of revolutionizing the agricultural industry of the world. Unhappily, our educational system prefers to teach how Cincinnatus left his plow to rust in a Roman field and returned to lead his legions to gory battle. Cincinnatus was a romantic figure because he helped rivers to run with the blood of barbarians, just as Von Hindenburg is a modern Colossus, having abandoned his country estates at the behest of the Kaiser to direct the slaughter of tens of thousands of Russians.

Now that the patents have run out on chilled plows, binders, threshers, mowers and innumerable other implements that were in common use on the farm a generation ago, nobody seems to give a rap how they were evolved or what were the improvements made in the last several decades. You might as well try to weave romance round the buttonhook. The fact that

they are articles of commerce and that the inventors and their successors made millions out of them gives them a sordid, commonplace aspect that fails to thrill.

But, coming up to date and studying the farm-implement industry as a huge and necessary modern enterprise, one need not search far to find a multiplicity of interests. The industry has now become a great and exciting game for those who are in it. The leaders in the industry speak of it as the "farm-implement game," and they also inform you that the game has now reached a phase of evolution or even revolution which will involve a lot of strenuous gambling for future profits. So far as scores of the little fellows in the industry are concerned it will require some tall gambling to keep out of bankruptcy.

The grit in the gears of the farm-implement business is long credits. For two decades it has been recognized as the bane of the industry, but big manufacturers winked the other eye, confident their gears were strong enough to stand it. If the little fellows' gears were ground to bits, that was up to them—they were merely the hop-o'-my-thumbs of industrial competition. But during the past few years the long credits grit has proved a serious menace to the big fellows' transmission, causing them to flock together in sober conclaves, pass resolutions and enter into gentlemen's agreements to readjust.

The readjustment problem was recognized as a tough proposition—one of the toughest propositions that any industry ever tackled. It involved a great variety of causes and effects. It involved the automobile industry and its growth and what its growth

has done to hurt the implement game. It involved the beginnings, sudden temporary collapse and recent sensational rebirth of farm-tractor manufacturing and distribution.

The Great War and its influence were involved. Fundamentally and of primary importance was the farmer himself and his hereditary disinclination to pay cash for anything he could get on time. It may not be quite true that he inherited this disinclination, as to lay faults to heredity is simply a lazy habit of passing the buck to our ancestors.

What was undeniably true, however, was that the present generation of farmers found the custom ready-made and of simple, effortless attainment. They bought on time, trusted to the gods who fostered crop production to help them pay out, and let it go at that. They bought from the dealers, the majority of whom had been farmers and were therefore accustomed to doing business on time and without the annoyance of keeping books or estimating the cost of overhead charges, or anything of the sort.

It is reckoned that three out of every four implement dealers are former farmers. It is also estimated that one of every four implement dealers goes out of business each year.

In the Eastern districts, particularly in New England, the majority of dealers are just farmer or blacksmith agents, with no stock on hand and not so much business system as a pushcart peddler. In the New England district the majority of the retail business is in the hands of men who have each less than $300 invested in stock.

Naturally there were multitudes of slow accounts and bad accounts, yet way back in the eighties the competition for this slow-pay and no-pay business was fierce. No other word will describe it. In 1880 there were 2000 manufacturers of farm implements. Patents had run out and anybody who had a forge or a small foundry or something resembling a factory could manufacture plows and things and put them out. The prices seemed to hold up high enough to take care of the immense amount of waste. But as competition sped up, the waste for the little fellow increased. Doing business on a narrow margin of capital became more and more risky. With a small and none too efficiently operated plant the cost of manufacture became a bogy. Raw material scaled up in price. Labor was organizing and demanding higher wages. As costs rolled up, prices did not mount to support them in the difficult ascents. The big fellows were saving themselves by increasing the volume of output and cutting production costs.

II

The Slaughter of the Innocents—Then the Tractor

A GRAPHIC chart has been made to illustrate the competition squeeze in the farm implement industry, or what has been called the slaughter of the innocents. This chart shows that in 1880 there were 2000 concerns doing business on a total capital of $60,000,000. By 1890 between 1000 and 1100 of these manufacturers had been laid to rest in bankruptcy or else had thrown up their hands and pulled out with what little capital they could rescue. During the next ten years several hundred more dropped out. Ten years ago there remained some six hundred competitors. The shrinking process has continued down to date, and the prospects are that it will continue until the industry is confined to several comparatively small groups and several combinations of groups that were organized during the sweating-out stages of the past decade.

This does not necessarily mean that the farm-implement industry is becoming a close corporation or is tending toward any gigantic combination or trust. Energetic independents are liable to spring up from time to time and intrench themselves so solidly that no sort of combination can dislodge them. There is

still room for inventive genius backed by a competent sufficiency of capital and modern business skill, and always will be. But the small tradition-following competitor with a narrow, insecure margin of working capital is caught between the long-term-credit millstones and seems to have no hope of prolonged existence unless some of the big combinations should find it profitable to absorb him.

At any rate this was the situation in 1916 so far as the farm-implement industry, properly so called, was concerned. When we come to discuss the new-blooming tractor industry the case is altered somewhat. The cards are just being dealt in the tractor game, and some of the big hands are as likely to fall outside as to fall inside the farm-implement industry. The appearance of the small general-purpose tractor and the measuring of the immense possibilities for its development are bound to draw vigorous new blood and brains to the immediate environment of the farm-implement industry.

During 1915–1916 the tractor industry had an amazing mushroom growth—in some aspects an unhealthy growth, in other aspects a benign growth. It had begun to follow the trail of the automobile industry on a cash-sales basis, and was accomplishing the impossible in this direction, just as the automobile industry did. It bled real hard money from the farmer where real hard money did not seem to exist before, and quickened the farmer's interest in machinery and mechanics as the farm implement never did.

Later I shall give some striking examples of this influence and attempt to analyze it. For the present I

shall simply offer a brief review of the widening farm tractor field and the possibilities it seemed to open up for the makers of farm implements equipped to manufacture tractors.

It should be inspiring to the imagination of future gas-tractor Napoleons to learn that our "inefficient underpowered" farms—to quote the present secretary of agriculture and several captains of industry—now employ approximately 24,000,000 mechanical horse power. This is allowing $\frac{7}{10}$ mechanical horse power to the farm horse and the farm mule. On January 1, 1915, the Department of Agriculture took a census of farm animals and stated that the aggregate of horses and mules was 25,411,000, worth about $3,000,000,000. These horses and mules developed 14,230,000 mechanical horse power.

Add to this 750,000 windmills developing 75,000 horse power, 100,000 steam tractors with 4,000,000 horse power, 1,000,000 gas engines developing 5,000,000 horse power and 20,000 gas tractors developing 600,000 horse power, and we have our grand total of 23,905,000—a grand total, indeed, when you consider that the total power used in all our great and little manufacturing enterprises is only 18,755,286 horse power. The great difference is that the farm power is merely the available power that is applied only as it is needed. Manufacturing power is practically a continuous load. During the war-munition-making period much of it was going day and night. There is no way of estimating the power units applied each year, but undoubtedly they are enormously greater than the power units a year applied on the farm.

That is just where this infant gas tractor is going to fit into the picture. He can stand the emergency endurance test where the horse and the mule fall down. He will pull all your tillage apparatus by moonlight as well as by daylight. If there is no moon all you have to do is to attach a searchlight. And when he isn't doing this field work he can do just what the now almost passé steam tractor is doing in the way of developing belt power. Just how far he will be able to supplant the stationary gas engine for other than pumping and specific household utilities is problematical, but certainly the possibilities are big enough to encourage the gifted promoter and give latitude to the eloquence of the salesman.

The estimate of 20,000 gas tractors was the January 1, 1915, estimate. Kansas was the first state to take a tractor census, but the reports furnished were brought up only to March 1, 1915. The total then was 2500. During the summer that followed Kansas bought more than 500 of the smaller-sized tractors. Just one Kansas City jobbing firm sold 1000 small tractors in Kansas, Oklahoma, Eastern Colorado and Northern Texas in a little more than three months.

One big manufacturing company was making as high as fifty "baby" gas tractors a day during part of the summer and thirty a day as the demand began to slacken. Forty new tractor concerns came into being in 1914–1915. In a 1916 list of 170 concerns making or assembling and selling tractors two-thirds of them were as new as the modern use of asphyxiating gas as a weapon for offensive warfare.

The steam tractor did not come into extensive use until after the Civil War, and it was then employed chiefly to run threshing outfits, small sawmills and feed grinders. Steam tractors never made good at pulling tillage apparatus because of their great weight and the difficulty in getting water to them on the dry Western plains where they could be used for breaking vast areas of virgin sod. The failure of the steam tractor for this purpose paved the way for the gas tractor, and along about the beginning of this century the big gas tractor came in.

Western Canada was opening up, the Dakotas, Montana, Western Kansas and the plateaus of the mountain states were calling to the plungers in grain to come in and make a killing. It looked like a golden market for the big gas tractor, and the manufacturers went to it. There was an exhilarating boom and then a bang, followed by a sudden collapse. The big gas tractor had been overexploited and oversold.

Numberless excuses were offered and a large variety of causes were carefully dissected. On the ruins of the collapse the long-credit specter sat and grinned. Then there was the human factcr that had been too lightly considered. The big gas tractor had been far from foolproof. It was not a simple mechanical device. Its intricacies demanded the control of experts and there were not enough experts to go round. The automobile had not yet begun to teach mechanics to hundreds of thousands of farmers. There was no permanent employment for high-priced mechanics on the farm. Just as is the case with harvest hands—when they were needed most they were scarcest.

There was a depressing lull in the gas-tractor industry during a period of five years and more, and it was within the period of this lull that the automobile began going out to the farm in enormously increased consignments. During the ten-year period that saw the rise and fall of the big gas tractor, farm-implement products increased in value 44.6 per cent. In the same interim automobile products increased in value 5148.6 per cent. How much of this increase was due to the farmer's purchasing power cannot be determined.

The farmer was not a heavy buyer of automobiles during the experimental and testing-out years. City men carried the burden of pioneering costs for the automobile industry. The automobile had to be simplified and cheapened before the farmer could come into the market and buy for cash. The automobile manufacturer had been compelled in the beginning to distribute his product on a cash basis because of the high cost of the product, and the great depreciation in the value of the product immediately it had come into the hands of the purchaser. Practically every motor-car manufacturer who experimented with long credits went to the wall.

The farm-implement people at first watched the automobile begin its rural inroads with small apprehension. They were not prepared for the wave of buying that suddenly set in. It didn't seem possible or at all likely that the farmer could or would pay cash for automobiles when he wouldn't for his harvesting machinery or even his tillage tools. But he did. He had to or go without. He dug up the cash somehow. He overcame his natural reluctance to borrow rather

than owe. He went even farther than that—he laid by money with the distinct object of purchasing an automobile. He saved by purchasing fewer farm implements or by making those he had go further than was his custom.

The implement manufacturers complain that he has carried this skimping to excess, with the result that his farm is not nearly so efficiently equipped as it was before he began buying automobiles. It is estimated that in the year 1915 American farmers bought almost $200,000,000 worth of automobiles. Iowa farmers alone bought 68,000 cars. The carless Kansas farm is almost a freak. This means that farmers are paying practically as much cash for automobiles as they are owing for implements.

Of course, it is an uneconomic situation and a galling one to the farm-implement group. It has made it more difficult to sell farm implements. Selling costs of both manufacturer and dealer have increased out of all proportion to actual sales.

What the implement manufacturers all seem to have fought shy of is a direct appeal to the imagination of the farmer by modern publicity methods. The automobile manufacturers on the other hand have done this with overwhelming success. Then there are the big mail-order competitors who are regarded by the majority of farm-implement dealers as monstrous devouring ogres. The mail-order catalogues are teaching the farmers to buy for cash. The dealers able to meet this competition complacently are those who are able to pay up and take cash discounts and then sell for cash themselves.

Service and improved selling methods seem to be the best defensive weapons with which to meet the big mail-order-house competition. Nor is the service end of it without its complications, as I shall endeavor to explain in a later chapter. So far the farmer has not gained a very distinct idea of just what the service advantages are. The automobile industry has done more in two or three years to bring this fact to his door than the farm-implement industry did in fifty. With the inclusion of the small farm tractor he should have a double awakening.

It is very probable that many of the smaller manufacturers will not be able to survive the pinch and strain due to the stocking up of the farm with automobiles at the expense of purchasing farm implements. But the ultimate educating processes cannot fail to exercise a benign influence.

The stationary internal combustion engine is a humdrum contraption by comparison with the automobile. Undoubtedly it has served to supply a primer course, but that is about all. The automobile, you might say, has taken the whole farm family unto itself and compelled it to examine and understand its intricacies. It has given a new interest in the farm to the boy and the girl. It has awakened an interest in tractors in tens of thousands of farmers to whom the tractor would otherwise have remained an object of awe that they would prefer to let the other fellows tinker with; and, still more potent in its direct influence, it has at least begun the education of the farmer in the advantages of paying cash in advance and assuming the full responsibilities of ownership.

You don't see many farm automobiles ditched in fence corners gathering rust and rot, and you won't see a great many tractors that have been paid for on the nail standing out in the field to collect dust and grit in their gears.

III

Plows

WHEN you see the womenfolks traipsing along Main Street wearing pill-box hats stuck up with goose quills or upside-down coal scuttles draped with little tomatoes and poison-ivy leaves you throw up your hands and wonder wherever these crazy notions will stop.

Men may not wear such fool clothes, maybe, but how about plows? Do you know that there are just as highfalutin notions in plows? Well, there are.

The out-for-the-vote sex may have gone in for multifarious fashions in clothes in the course of a few decades, but so has the farmer gone in for multifarious types in plows. And still does.

Down in your valley, or up in your hill country, you may not see so many different sorts and shapes and makes—possibly not more than a dozen different kinds. There may be a couple of types of riding plows, half a dozen varieties of walking plows, and some little old eight-inch plows that a farm chunk can pull along comfortably. There may be a few gang plows about of different makes—probably one or two of the bigger farmers have engine gangs. New big and little tractor gangs began pouring into the market in 1914 and by the spring of 1916 there was a teeming diversity of

them. Also, very likely there is at least one man in the neighborhood who is trying out a deep-tilling device.

But your general impression is that plows is plows, just as pigs is pigs.

That isn't so at all. There are more different kinds of plows than there are breeds of dogs. There are immensely more selected types of plows than there are selected breeds of dogs, pigs, dairy cattle, beef animals and horses.

In one of the big plow establishments I visited in Moline, Illinois, I was informed that they made and carried in stock about 1000 varieties of plows. A neighboring plant carried about half a hundred types, but could further vary this line with attachments and adjustments. In these plants the steel plow was the leader, though they were equipped to satisfy most any plow shopper that came along, whether from the sand dunes of Long Island, New York, or from the tule islands of the San Joaquin Delta, California.

But the catalogue listings of today are not the end in stock by a good deal. No one in the plant where they made and distributed 1000 varieties could tell the exact number in stock or in the process of fabrication on that specific date. Possibly there were 998, just as likely 1116. New patterns were coming in every few days.

The farmer is every bit as fickle in the matter of plows as ever woman was in the matter of her wardrobe.

No plow maker who is playing the game in a big way lets anything new in plows get away from him.

His agents are out searching the forty-eight states, the Canadian provinces, the South American republics, all the countries involved in the great war, and the neutrals not involved.

The plow makers abandoned the imitation of new styles in plows in the war zone. Instead they browsed round in Patagonia, British South Africa, Madagascar, Java, Burma, the Philippines and the Sandwich Islands. At least one or two sent scouts to Iceland. You heard of quite a squadron of style-scouts nosing about in Siberia, the Caucasus and also in the Euphrates Valley until the warring Turks and Russians drove them out. If you could follow these chaps about in their wanderings, you would acquire a most complete and liberal education in geography.

These are just a few facts about plows that should contain a general interest appeal; also they ought to convince you that the modern farmer, wherever he farms, is considerably coddled and petted by the plow manufacturers. They not only give him an ample sufficiency in plow patterns but add to that about 900 surplus variations—what you might call notional variations—for which there is no adequate justification.

As for present-day plow patents, they are about as elusive and intangible as millinery patents. Fundamental patents in the processing of steel and chilled iron have run out. The shaping of shares and landsides and moldboards has evolved kaleidoscopically. There are as many different designs as there are geometrical patterns and curlicues in a jigsaw puzzle, and if you get round enough you will hear from dealers and selling agents that there is a selling argument for each one.

The history of the evolution of the plow is fairly absorbing, if not thrilling. Few of us who as schoolboys did or who as schoolboys do recite passages from the immortal oratory of Daniel Webster know that the great Dan'l invented a plow. He did, 'way back in 1836, the year before John Deere made his first steel plow. But the Webster plow never became a gracious commodity of commerce, notwithstanding that it was considerable of a plow. The trouble was that it was too much of a plow. Furthermore, Webster was only a statesman of the old school, with very little business keenness.

The Webster plow was a little matter of thirteen feet long from the bridle to the tip of the handles; length of beam, nine feet; height of beam, two feet, one inch. The landside was four feet and two inches long. The bar and share were forged together. The moldboard was of wood, with a strip of iron. The breadth at heel of moldboard to landside was eighteen inches. The spread of the moldboard was twenty-seven inches, and the lower edge of the beam was two feet four inches above the sole. The width of the share was fifteen inches. The plow weighed 372 pounds.

The Webster plow might have amounted to something had the gas tractor preceded it. As it required four yoke of oxen to pull it, Webster's neighbors looked on unenviously. There was no rush to duplicate it.

Folks round about Marshfield, Massachusetts, where Dan'l farmed, were very fond of their famous neighbor, but they simply couldn't see his plow. No Marshfield blacksmith sought to plagiarize it.

This historic plow is today housed in the machinery room at New Hampshire College, Durham, N. H. Moreover it is splendidly preserved. I am indebted to Dean Taylor, of the Agricultural Division of New Hampshire College, for the authentic history of the Webster plow down to date. Upon the death of Webster it was secured by the New Hampshire Historical Society and taken to Hanover. At the opening of Culver Hall in 1871 David M. Clough, the then "Corn King of New Hampshire," plowed with it, turning several furrows. In 1891 the plow was removed to Durham with the New Hampshire College. It was exhibited at the Philadelphia Centennial Exposition in 1876, and at the Chicago World's Fair in 1893.

The first American plow patent was granted to Charles Newbold of Burlington, New Jersey, in 1797. Our colonial forebears had worried along with a plow of which the moldboard and standard were of wood. The moldboard was sometimes plated with sheet iron. In Newbold's plow the moldboard, share, landside and point were a solid piece.

This was an improved plow and a great American achievement, according to the recorded opinion of Thomas Jefferson. But it was not the first metal plow by a margin of tens of centuries. Turning to I Sam. xiii, 20, which was written into the Old Testament about 1100 B. C., you read: "*But all the Israelites went down to the Philistines, to sharpen every man his share, and his coulter.*" The Romans plated their plows with iron, and so did the early Dutch. But for twenty-nine centuries no radical improvement worth mentioning was made in the plow.

The Newbold plow had a serious defect in the fact that landside and point were cast in a solid piece. When the point wore out, the plow was worthless. Jethro Wood came along then, about 1819, and made a plow in sections, so that the worn parts could be renewed. William H. Seward, writing of Wood, said: "No citizen of the United States has ever conferred greater benefits on this country than Jethro Wood." But the reward of merit did not come to Wood. He was one of that luckless legion of inventors who do not make good commercially with their inventions. He died in want, after furnishing a model for plows that made many other men rich.

The next great advance was not so inadequately rewarded. John Deere gave the West the "plow that would scour" back in 1837, and John Deere made good both as an inventor and as a manufacturer. Some plow historians record that one John Lane antedated Deere by four years in making a steel plow, and there is no doubt that John Lane in 1869 did conceive of and patent soft-centered steel which was another epoch-making step in plow manufacture, as was the Oliver process of chilling cast iron which preceded it by a year.

Deere made his steel plow at Grand Detour, Illinois. The moldboard and share of his experimental plow were formed of strips of steel cut from an old saw. Three strips of steel of different lengths were used for the moldboard and one for the share.

The texture of Illinois prairie sod was in a way the Mother Necessity of this invention. The iron plow might serve in the gritty, gravelly and stony lands of

the East, but out there in the Mississippi Basin it was a difficult tool for the pioneer. John Deere's invention is recorded as a good deal similar to the fabled revelation of the law of attraction and gravitation to Isaac Newton. Newton reclined under a tree and watched an apple descend. Deere watched a saw blade "scour" under friction. He was a plow maker, and inspiration came to him to bend a saw blade over a log and see how it would operate as a moldboard. It worked beautifully. The longer it worked the higher the polish and the smoother and easier the pull.

Deere was really a frontiersman when he moved from Grand Detour and set up his little factory at Moline in 1847. So was William Parlin, when he entered the industry at Canton, Illinois. But the great mass of us never hear of these gentlemen, or if we do we are apt to catalogue them in our memories as we do purveyors of soap or patent candles or porous plasters. Nor are their names, brought down to date by the great manufacturing corporations they founded, so familiar to our ears or vision as some of the soap- and patent-medicine-making groups. I recall a time when Plymouth Rock three-dollar pants were better known than any standard make of plow in New England. *The pants sold for cash and the plows didn't.* The pants were advertised on hillside, fence, barn and factory wall by pioneer Yankee advertisers. The plows were not.

The harrow evoluted even as the plow. There do not seem to be any early Egyptian or Chaldean records of this very important modern implement, but as they didn't do much more than scratch the surface of the

soil with their wooden plows in those days such a thing as harrowing was probably regarded as an æsthetic pastime. But we do learn from the old Roman records that the first empire builders made some crude advances in the development of the harrow.

The prehistoric husbandman did all his harrowing, when he harrowed, with the branch of a tree attached to the tail of whatever beast of burden he employed as a draft animal. At the time when human slaves were cheaper than draft animals probably a little group of husky barbarians clanked along in their chains, pulling the heavy tree branch that was employed to smooth the furrows.

Some centuries before the beginning of the Christian Era, however, progressive Roman farmers discarded the tree branch and contrived a wooden crotch armed with wooden teeth or iron spikes. From time to time they varied the shape of their harrows. Beginning with an implement of triangular construction, they gradually changed until they had evolved the oblong or square harrow, fitted with improved teeth or spikes of divers hard woods and metals.

This sort of contrivance served the unimaginative and tradition-following peasant and serf through the Dark Ages and beyond. The renaissance of art and letters brought no improvement or perfection to the harrow. The let-well-enough-alone complacence of the man on the soil preserved the antique in all its crudities well into the last century, when the Yankee pioneer demanded something different.

Not that the Yankee pioneer voiced his demand. So far as the advance of all farm implements is concerned,

the farmer has been practically a silent accepter and tryer-out. The man behind the forge, or later the skilled mechanic, was the inventor in ninety-nine cases out of a hundred. True, he may have farmed in his youth and in many cases he was the son of a farmer, but it was the gift of inspiration and imagination in mechanics that made him the trail blazer. He studied the deficiencies of the good-enough implement and then made improvements. He studied the new soil conditions that called for different and improved implements and created those implements.

That was how the colter-harrow came along in 1857. Here was a harrow that pressed down and cut into the soil and scraped the surface to some extent. The disk harrow was a very real and permanent improvement. So, of course, was the spring-tooth harrow for rough and stony ground. The luxury of the riding harrow followed hand in hand, you might say, with the luxury of the riding plow. The development of the lever harrow overcame some of the more serious objections to the rigid-tooth harrow, giving a variable pitch to almost any kind of tooth.

The important varieties of the tooth harrows are straight fixed tooth; adjustable tooth; curved tooth—pulverizers; spring-tooth—weeders. The chief variations of the lever harrows are straight tooth, cultivator tooth, spring tooth and combination spring and spike tooth. In disk harrows we have the main branches—full disk, cutaway, spading, orchard—and numerous variations. And among notably important later developments there is a pulverizing harrow, clod-crusher and leveler.

The diversification of types in the harrow as in the plow is almost endless. You may look for something new in harrows as in plows almost any day of the week. Undoubtedly many new and important inventions in harrows will come in behind the small tractor. Likewise will there be freaks and oddities sprung by some of the frenzied competitors in the trade.

The cultivator line is not so long. The concern I mentioned that makes one thousand types of plows offers the farmer *only sixty* different kinds of cultivators.

The cultivator, naturally, evolved from the hoe to the horse-hoe, to the double-shovel plow, and to the straddle-row cultivator, which came in in the later fifties, consisting of two double-shovel plows, one on each side of the row. This implement, pulled by two horses, was really a tremendous gain over its predecessors and a revolutionizing force in tillage methods. The riding type of the straddle-row cultivator was merely a refinement. The disk cultivator came in the wake of the disk harrow.

IV

Senseless Diversification

THE Eastern farmer is more to blame for the seemingly senseless diversification in tillage tools than the Middle Western or Western farmer. Eastern farmers never made any attempt to standardize their planting methods. Often you will find half a dozen adjoining farmers planting half a dozen different widths of rows. As for the South, the width of row seems frequently left to the guiding whim of the mule. And in the implement industry the exploiters of tillage apparatus have sought more strenuously to satisfy than to control whims.

The small beginnings of plow and tillage-tool manufacturers do not interest us as they would had some of them been scalped by Indians or besieged in blockhouses, or even if they had painted up the landscape with monster presentments of their wares. The plow industry does not seem to have devoted itself so much to attaining definite standards as to diversifying varieties. After visiting one great plow plant in Indiana I came away with the impression that if a farmer only possessed nerve enough to ask for it he could have a new type of plow made for him while he sat down and smoked his pipe.

In this plant, where the chilled plow was the specialty, but where they also made an extensive side line

of steel plows, they made as a matter of routine manufacture 350 varieties of shares, and every plow they made could be put up in seventy-five different ways. Of some of the varieties of shares carried they sold only one a year. They still carried in stock and made as demand called for it the identical product that the founder of the concern had contrived 'way back in the later sixties.

To list all the varieties of plows that have come into existence during the past forty years would fill a small volume with agate type. An infinity of village blacksmiths had been devising plows to meet local soil conditions round about their villages or hamlets or to meet the wants of newcomers from distant parts who desired to perpetuate the kind of plow their forefathers used. Husbandmen from overseas brought peculiar plow ideas with them.

Now and then neighbors grew to dislike one another to such a bitter intensity that they must have something different to plow with than the contraption the hated Jones was using. Smith, having convinced himself that Jones was a low-down, no-account cuss, easily persuaded himself that Jones' plow was just as low-down and no-account, for no other reason than that it was Jones' plow.

When plow manufacture was firmly established and the manufacturers began to devise methods of sale and distribution they were confronted with the problem of meeting local taste and competing with local blacksmith production by imitating the local blacksmith's product. In the course of time many of these local blacksmiths expanded into plow makers and got

into the manufacturing game and established a local patronage that was mighty difficult to uproot. It was a long-credit business generally and competitors were compelled to buck it on a long-credit basis.

The aggregate economic waste due to this sort of competition must have been enormous. In a thickly settled civilization the industry could never have stood the strain nor could the farmer have supported the burden. But our agricultural resources and opportunities were sufficiently great to take care of billions of waste. The uneconomical methods of the farm-implement industry were only one phase of this waste. Scientific economies were not only unnecessary but impossible.

New business for the plow maker grew up overnight in many different directions. Farmers were moving West every year by the tens of thousands. Generally they left their old implements behind them, or if they brought them with them they found them practically useless in the new regions they had gone to pioneer in.

The shrewd manufacturers who cast out their tentacles for this ever expanding business and nailed it down were the ones who made great fortunes. They expanded their manufacturing plants and their sales organizations in unison. They could buy their raw materials in greater quantity and save on production, and the savings they made in this way could be spent in extending their sales organizations.

For at least a generation the smaller competitors have seen that the only solution of their problem was "to expand or die." Those who had not the courage

or the means to expand were recorded in the mortality lists.

After the chilled plow with removable point and the prairie breaker and black-land steel plows had established themselves, and had forced into the discard the cruder and old-fashioned types, there was very little worth recording in plow advance so far as the plow itself was concerned until the sulky or wheeled plow was developed during the later sixties and early seventies.

The riding plow was purely a Yankee product. The first successful one was invented by F. S. Davenport in 1864. The rolling colter and a three-horse evener were added by Robert Newton, of Jerseyville, Illinois. Then came the Gilpin Moore and the W. L. Cassaday patents in 1875 and 1876, and since then innumerable improvements and additions have been made to the sulky plow. The reversible hillside plow was probably the most notable.

The jointer or skim plow, as an attachment, was a mighty important improvement, and so was the disk plow in localities where conditions were well adapted to its use. Then came the deep-tilling plow, the engine plow, and a great variety of engine tillage apparatus that just now is very much in the limelight and is occupying the attention of all the inventive genius in the industry.

It is safe to say that the market for engine plows will in less than a decade be greater than the market for sulky plows. The engine plow is still in the infancy of its evolution. Originally devised for heavy, high-powered tractors, and slightly modified for the twenty-five to thirty horse-power tractor, it has yet to come

to its highest efficiency behind the small, general-purpose tractor that promises to become within the next few years almost a raging fashion among farmers.

The plow makers watch the development of the smaller types of gas tractors warily and proceed with extreme caution. The general manager of the biggest plow-making establishment—as an exclusive producer of plows—said to me in this connection:

"During the summer of 1915 a succession of gas-tractor people urged us to make engine plows to meet the special needs of their tractors. Many of these tractor concerns had barely come into existence. Their product was untried. Their stability was more than questionable. They bought parts from specialty manufacturers and assembled them into something that resembled a tractor and which, under the most favorable conditions, would pull two or three bottoms.

"These concerns had had no opportunity to test out their tractors under varying soil conditions, nor did they seem likely to have such an opportunity with their limited capital. If we should build a special plow for their special tractor and that tractor should fail, it would be perfectly natural for the farmer to charge up some of the blame for the failure against the plow that we had made.

"Forty of these new concerns have come into existence during 1915, and the scramble will undoubtedly continue. At present we make engine plows to meet a variety of requirements and we shall continue to expand our engine-plow business as the demand governs. But we shall follow a steady, dependable demand.

"We shall also endeavor to protect our dealers by selling our engine plows through them, just as we sell our walking plows and sulky plows. At least, that is the way the situation seems to shape itself just at present. We cannot predict what may happen within the next few years."

The situation is bound to be complex if the tractor manufacturers succeed in selling their tractors for cash and the plow manufacturers continue to sell plows on long credits.

There does not appear to be any good economic reason why the engine plow and the engine harrow should not become an integral part of the gas tractor, just as the self-starter has become an integral part of the automobile.

So far as the farmer is concerned he should distinctly benefit by buying his tractor and plows or other essential tillage apparatus as a fully tested one-piece mechanism rather than be compelled to take the word of various and sundry dealers concerning the plow that will specially fit his needs.

Of course, some of the big implement concerns that are making tractors are also making plows peculiarly adapted to their tractors. The biggest of all the implement concerns does not make plows, notwithstanding that it has gone into the small-tractor game with a rush and is producing in its own plants more small tractors than any of its rivals. This great corporation, however, is in a dominating position so far as the engine-plow situation is concerned. It can get what it wants in the way of engine plows and sell them as it sees fit.

V

Legless Heroes as Mechanicians

THIRTY-TWO one-legged mechanicians were recruited from the trenches to study American farm machinery. They were just patriotic Frenchmen when they went to the front. They were not mechanics. Some were bookkeepers, some drove taxicabs, some were clerks in department stores. A few were the sons of peasants. A few were policemen. All were heroes, and when they came out of the hospital they were worshiped as such.

But sympathy and adulation will not keep the stomach full. Likewise the loss of a leg is a serious handicap in the struggle for bread.

Why not make them mechanicians in this age of power and machinery? They had learned the intricacies of machine guns and light artillery. Why not teach them the intricacies of American reapers and binders, of tractors and threshers?

This was the idea that flashed up in the mind of Doctor Bourrillon, in charge of a great home for convalescents. He expressed it as follows:

"Most of all, France needs and will need mechanicians. Every little country village, no matter how small, should have its trained machinist. For, look you! The work which the French peasant has been

doing by hand, as his father has been doing before him, must hereafter be done by machine."

So he assembled his legless heroes and started a class in mechanics. He set his pupils to work on American harvesting and threshing implements, which they must learn to take apart and put together again, as they would have to do when they set up their little machine shops and tractor garages out in the countryside, or when they entered the employment of the big distributors of farm implements.

This may seem like a random shot or an irrelevant bit of news from the front. On the contrary, it is mighty significant when we take up the discussion of the merchandising of farm machinery and the growth of great companies that absorbed and killed off little competitors.

The foreign business of our big implement companies has been for some years an anchor to windward. It has enabled them to a considerable degree to continue their system of long credits in this country. Primarily it enabled them to increase vastly their output and thereby to cut down the cost of production. They invaded the world's markets with a superior product and sold it for cash on the docks at the same time they were selling the same stuff on long time at home.

The American farmer has heard a lot about this from the mouths of certain eloquent politicians. It has been noisily declaimed that the implement manufacturers were selling farm machinery to Siberian peasants for less than the American farmer was paying. So in Argentina, so in Bessarabia, so in Australia.

Possibly this was true to some extent while a market was being opened up and sales were made for cash. The manufacturer offers the excuse that the engineers of export pioneering compelled such price discrimination. The manufacturer also adds this hypothesis: "If a Hamburg, or Rotterdam, or Vladivostok jobber takes up his bill of lading and pays cash for his shipment, also paying freight and whatever duties may obtain, is there any reason why he should not make a better bargain than the dealer at home who demands a year within which to settle accounts and after that year is up will need further extension of time on implements unsold?"

It is further urged that special cheap products are sold in certain foreign districts at a price below the level for similar, but much better quality, products in the United States. This might be called the German method of invading foreign fields. German manufacturers learned how to beat the world at turning out cheaper products—poorer in quality but just good enough to stand up—and underselling all competitors. Not in the farm-implement line however. Even the Germans couldn't do that without a big home market to back them up. As I have observed before, when it comes to speeding up farms with machinery the Teutons are not one-two-three with us.

If our implement industry had been confined to plows and small tillage tools, there probably never would have come into being this present-day specter of long credits and baffling intricacies of distribution. Small tools could have been sold outright to the dealer, who in turn could have marketed them to the farmer

and got his cash for them, except in extraordinary cases of crop failure. But when expensive machinery, such as threshers, reapers, binders, mowers, and so on, came along it became necessary to do a lot of financing.

At the top came the manufacturer; one step down was the jobber; then the dealer or farmer agent; and finally the farmer. To work back, the farmer couldn't pay cash for this expensive machinery, as he didn't have it to pay. At the beginning of things he was pioneering. He was in pretty deep himself in a game and a gamble. He was breaking prairie or grubbing sage or making over swamps; likewise was he fighting grasshoppers, Hessian flies, rootworms, blights and mildews.

The reaper was developed in 1831 and came into use in the early forties. The crude beginnings of the mower had preceded it. Along in 1864 came the Marsh harvester—a reaper with a platform upon which two men could stand and bind the grain as it was cut. Then in 1875 came the wire-binder, which automatically made and tied the bundles. The automatic twine-binder replaced this five years later.

All the great advances in farm machinery save the tractor came within this period, and during that same great epoch our armies of pioneering husbandmen marched ever westward, creating new business for the implement men, as the implement men in their turn had created boundless opportunities for the pioneer.

You can get an insight into the history of these glorious times from the pithy exclamation of an Illinois farmer:

"When I first went into the harvest field it took ten men to cut and bind my grain," he said. "Now our hired girl gets on the seat of a self-binder and does the whole business."

But the men who began buying this harvesting machinery, or, as one man has said, "these painted chariots that worked the miracle of plenty," were almost hopelessly shy of cash. So were the banks—what banks there were. And the manufacturer in his turn, for a while at least, was hard up for cash. All the money that could be scraped from all the banks wouldn't much more than buy the egg crop of Iowa, Kansas and Illinois today.

Hence the farmer bought on time. And he paid high. If he hadn't paid high there wouldn't be any survivors in the industry today. Also he bought extravagantly.

Some manufacturers will attempt to deny this and offer you a scuttleful of statistics to prove that American farms are still 'way underpowered in the matter of machinery equipment.

So they are, tens of thousands of them, if you size it up in a merely statistical light and don't care how you swallow your statistics. It is always better to salt down and sweat out statistics if you want to get anywhere near the truth.

The farmer not only bought farm machinery extravagantly but he used it extravagantly. He still does, but to nothing like the same extent. Sales were pushed at the farmer through three powerful agencies—manufacturer to jobber, to dealer, to farmer. And there were heavy risks all along the line.

If all the dealer's customers came out of their harvests dripping with profits the dealer collected in full. Presto! the jobber collected in full. But the jobber was selling to more than one dealer. He didn't make good on all his risks unless all his dealer customers made good on all theirs. And still higher up, and carrying a still greater burden of risks, was the manufacturer. He didn't make good on all his risks unless all the jobbers made good on all theirs.

As the industry grew up the manufacturer was constantly blazing new trails for his distributing organization. He was giving the jobber lessons in selling to the dealer, and the jobber was giving the dealer lessons in selling to the farmer.

But who was giving the farmer lessons in buying? Nobody. Just now our schools of agriculture have begun to teach the value of farm machinery and to explain what implements are necessary and what are unnecessary or uneconomical.

Some of the colleges have splendidly equipped engineering departments and have begun admirable teamwork with the farmer and the manufacturer. And our Federal Department of Agriculture has become almost awake to the fact that machinery is used on the farm—machinery other than plows.

Not that you could say that the Federal Department of Agriculture is up and alert on farm machinery in the year of grace 1916. Just go down there to Washington and try to get some official information on the farm-implement industry as I did. Don't go, though, if you desire any down-to-date data. You won't get them. You may find a bulletin on tractors

that came out about five years too late to be of any use. You may find another little bulletin, Farm Implements and Machinery, vintage of 1901, containing tables of statistics showing that six-foot twine-binders sold at $325 in 1880 and at $120 in 1900. You will also learn from it that the same spring-tooth harrow—sixteen-tooth—that cost twenty-five dollars in 1860 was selling for seven dollars in 1900.

VI

Squeezing Out the Jobber

WHAT you do not learn from official government bulletins is that a generation or so of manufacturing not only has cut down the price of tools, but has enormously increased their efficiency; nor do you learn anything about the processes of change that have occurred in the industry. There is not a hint of the gradual elimination of the jobber from the distribution system, of the union of affiliated companies and the combination of competitors into great dominating corporations. There are just a few naked statistical facts with no explanations attached.

The jobber was not forced out of the distribution system because he oversold or undersold the farmer through the dealer. He was forced out primarily because he was a weak link in the chain. The closer the relations between the manufacturer and the consumer of farm implements the better for both.

A farm implement is not bought, put on and worn like a pair of shoes. Even a plow is a mechanism of a dozen or more distinct parts. Some harvesting machines have as many as 2500 parts. Parts wear out, some much faster than others. Or they get kinks in them. Or they are busted by bunglers. Or the user gets mad at them and wallops them with an ax.

With the jobber between the manufacturer and the dealer, the manufacturer was seriously handicapped in passing along aid, advice and service to the farmer. The dealer was vitally necessary to perform neighborhood service, but the jobber couldn't help to any extent, unless he were big enough to carry a pretty full stock of repair parts and shoot them along to the dealer when he needed them.

The manufacturer wanted closer personal relations with the consumer than he could obtain through the jobber. The jobber built up a personal business of his own, sent his salesmen out and got what business he could, not for one manufacturer but for a dozen or a score. When the jobber died his business died with him. Not always, but pretty much as a rule. Some other jobber, working for other manufacturers, came in and grabbed this business, and the manufacturer whose jobber had dropped out had to begin all over again to work back into the territory.

The method employed to eliminate the jobber was to establish branch houses or to absorb the jobber and create of his business what was virtually a branch house. A great plow concern in the early days of its expansion persuaded men to establish jobbing houses in new territory and lent them capital to set them going. This plow concern carried a fairly complete line of tillage tools, but in order to stock up the jobber with a necessarily complete line it was compelled to fill out with the lines of other factories. To do this the manufacturer himself had to become a jobber.

As sales increased in the side lines the men who were making them soon found that their capacity of

production had reached the limit. They didn't quite dare to expand, for the plow maker who was jobbing their products with his tillage lines might suddenly decide to drop their lines and take up the wares of rival producers.

On the plow maker's side he found that his plow business was getting ahead of the special side lines he had taken on. He also figured that he was making money for the manufacturers of the side lines that he might as well make for himself if he could handle both production and merchandising. Naturally this brought up the question of the advisability of buying out the plants of the affiliated lines.

As an example, say the company was making tillage tools and had begun to job wagons or buggies. Through the branch house it was found easier to sell the dealer tillage tools with wagons than tillage tools without wagons. The dealer was going to buy wagons anyhow, and could save in freight by buying in carload lots.

But the wagon maker couldn't keep up the production pace of the bigger manufacturer of tillage implements. Say the proposition was put to the wagon maker to sell out. He was offered a price that was to a certain degree tempting. He might figure that if he remained an independent and expanded he might in the end get more out of it. But if the tillage maker dumped his line and then set up a new wagon plant of his own, where would the wagon maker get off? On the bird-in-the-hand theory, he would better sell.

And that is what happened in a good many cases. The producers of affiliated lines sold out their plants

and their businesses to the dominating concern that was jobbing affiliated lines. The plants were kept separate and it was undoubtedly possible to obtain higher efficiency in production and to accomplish notable economies in distribution and sales. Also by taking on noncompeting lines it was possible to skirt round the Sherman Anti-Trust Law.

To show what manufacturing giants might be wrought by this method of absorption and expansion I shall list the various Deere factories and what they make today under the control and direction of a $65,000,000 corporation:

Deere & Company, Moline, Illinois: Steel plows, 1000 varieties; cultivators, 60 varieties; and harrows.

Deere & Mansur Company, Moline, Illinois: Corn planters, disk harrows and beet tools.

John Deere Wagon Company, Moline, Illinois: Farm and mountain wagons and teaming gears.

Marseilles Company, East Moline, Illinois: Shellers, portable elevators, wagon dumps and manure spreaders.

Davenport Wagon Company, Davenport, Iowa: Roller-bearing steel wagons and gears.

Dain Manufacturing Company, Ottumwa, Iowa: Hay loaders, stackers, sweep rakes and presses.

Dain Manufacturing Company, Ltd., Welland, Ontario: Hay tools and spreaders for the Canadian trade.

Syracuse Chilled Plow Company, Syracuse, New York: Full line chilled plows and spring-tooth harrows.

Fort Smith Wagon Company, Fort Smith, Arkansas: Wagons for South and Southwest.

Van Brunt Manufacturing Company, Horicon, Wisconsin: Grain drills and seeders.

Deere & Company, harvester department, East Moline, Illinois: Mowers, rakes and binders.

And all this was built upon a band-saw plow made for the pioneer trade. To show how the jobber has been absorbed as the industry expanded it is only necessary to mention that the John Deere Plow Company has branch houses in Minneapolis, Moline, Des Moines, Milwaukee; Bloomington, Illinois; Omaha; Sioux Falls, South Dakota; Kansas City; Oklahoma City; Denver; St. Louis; New Orleans; Nashville; Atlanta; Dallas; Portland; Spokane; Seattle; Boise, Idaho; San Francisco; Indianapolis; Columbus, Ohio; Lansing, Michigan; Baltimore; Syracuse, New York; Winnipeg, Manitoba; Saskatoon, Saskatchewan; Calgary, Lethbridge and Edmonton, Alberta; Toronto, Ontario; and Salt Lake City.

Other big expanders who followed the Deere method of taking on affiliated lines are the Moline Plow Company, Emerson-Brantingham Company, Janesville Machine Company, Rock Island Plow Company, Parlin & Orendorff Company, Rumely Products Company, J. I. Case Threshing Machine Company, J. I. Case Plow Company, and Massey-Harris Company of Canada.

In its defense to the Government's anti-trust suit the International Harvester Company sought to show how these expanders were really active and energetic competitors.

And this was notwithstanding that the methods of expansion had a very different origin.

There were the Deere Company selling 108 implements to the International's 59, the Moline Plow Company with 57, the Emerson-Brantingham Company with 47, the Rock Island Plow Company with 34, Parlin & Orendorff with 28, the Rumely Company with 26, the J. I. Case Threshing Machine Company with 20 and the J. I. Case Plow Company with 19.

Deere, it was urged, competed with 49 of the International's 59 lines, having entered the harvesting trade as a real competitor; the Emerson-Brantingham Company competed with 33; the Moline Plow Company with 31; the Rock Island Plow Company with 21; Parlin & Orendorff with 17; the Rumely Company with 13; J. I. Case Plow Company with 11, and J. I. Case Threshing Machine Company with 8. The Emerson-Brantingham Company was a vigorous competitor, so the International's brief maintained, in mowers and rakes.

The Emerson-Brantingham Company is a $50,000,000 corporation; the J. I. Case Threshing Machine Company has an authorized capitalization of $40,000,000; the Moline Plow Company is an $18,000,000 company; the Massey-Harris Company has an issued capital stock of $15,000,000 and resources of $30,000,000.

The Moline Plow Company did not begin the manufacture and sale of its harvesting line until 1913; the Case Company began the construction of a plant for the manufacture of binders about the same time. The Government suit against the International was then under way. The Deere Company went into the mower business in 1909 by buying the Dain plant. It made

its début in the binder business in 1911, selling 27 binders in that year and 933 the following year. The Acme Harvesting Machine Company entered the field in competition with the so-called Harvester Trust in 1907–1908, and in 1912 sold 31,000 harvesting machines.

This reads a good deal like a record of the survival of the fittest, and to a large extent may be regarded as such. Of course, it is far from a complete Who's Who of the implement trade, though it contains the names of the leading big diversifiers who followed the trend of expansion and worked out elaborate manufacturing and merchandising facilities, but remained practically at a standstill on the long-credit sales method.

To return to the branch-house method of distribution employed by these big fellows, it has been the custom to assign to each branch house an exclusive territory. Each branch-house manager puts his men on the road to sell to the dealer. Nowadays there are many other branch houses of many other big concerns in the same territory and some surviving jobbers.

The branch houses pretty generally are not so much concerned with extending business for profits that they can show on their books as with increasing the volume of business. This is the big advantage they have had over the jobber, as distinctly a wholesaler doing business for a wholesaler's profits. Probably the majority of the branch houses are jobbing lines manufactured by independents, but they are jobbing these lines more as a convenience than for the purpose of earning a jobber's profit. Naturally this situation has given the branch houses a big advantage over

competing jobbers who were not big enough and strong enough with the personal trade they had built up to stay in the game.

The wholesalers who have stood the gaff are the ones who amplified their lines with specialties that the farm-implement branch houses could not carry and who have been financially strong enough to carry their dealer customers through hard times and thereby strengthen the personal relationship. Some of the big jobbers who have been able to remain in the game have stood to some extent as a barrier between the little independents and the ever-fattening holding companies and combinations that were squeezing the independents against the wall of competition.

For the manufacturer the branch house is a much more flexible arm of distribution than the jobber ever was or could be. The manufacturer autocratically dictates prices and methods of sales and distribution to his branch houses. There is no annual wrangle over prices and sales.

As the big jobbers were bowled out of it in the great distributing centers for farm implements they were naturally very bitter in their criticisms. Many of them related how they had toiled patiently and diligently to build up big trade for implement manufacturers, only to have the lines taken from them and branch houses established.

VII

Elaborate Systems of Merchandising

THE International Harvester Company, since its organization in 1902, built up even more elaborate systems of merchandising than the branch-house method employed by the manufacturers of tillage tools and threshing outfits. Jobbers who have not survived, and some who are barely surviving, declare with bitter vehemence that the I. H. C. method is both more elaborate and more ruthless.

The tillage-implement route of distribution is: Factory to factory branch house, to retailer, to consumer. The International route is: Factory to general agent, to retailer, to consumer. The general agent has his branch distributing warehouse just as the manager of the branch house has, but he does more than merely send out salesmen to push his wares to the retailer. The general agent divides up his territory among a staff of submanagers called blockmen. The general agent's territory may embrace several states. The blockman's territory will include from one to six counties.

The blockman is paid a salary and sometimes a commission to supplement the salary. And he is more than salesman, for he not only sells to the retailer, but employs canvassers to assist the retailer in selling.

Say the blockman has persuaded a retailer to stock up with a full harvesting line. Having done this he does not leave it to the retailer to let his sales flow along in the natural course of events. It is his function to speed up each retailer by a system of assists. The canvasser provides the assists.

The canvasser is employed by the month for a few months at a time. He is hired on a salary and is coached by the blockman how to sell to the farmer. The blockman will take his canvasser to the retailer and say something to this effect:

"Here is a young man to help you sell our line. Just drive him round to any prospects you have and he will make the selling talk for you. You get your commission just the same."

While there is no doubt of the efficiency of this system, it is open to criticism. It has been criticised. It has been bitterly assailed—chiefly on the ground that these canvasser assists are far from conservative in their selling talks. Taken on for a few months at a time they have no follow-up responsibilities. They are not coming back to the same territory again. When it comes to a selling talk they feel pretty free to go the limit. It is only human nature that they should extend themselves.

And if all does not turn out as golden and rosy as they pictured it the farmer victim can "holler" in vain and there is no one round to catch the "holler." The retailer can sit back and say: "Well, I didn't sell you. I simply delivered the goods." The dealer may pass the buck—not that he always does. If the kick should be passed along to the blockman he could pass

the buck, too, as the real villain in the case—the elusive canvasser—has gone his way and is possibly working for some other blockman in some other field.

It also happens occasionally that the dealer who is taking the canvasser round is handling only one line for the canvasser's company. The dealer may handle somebody else's wagons, another manufacturer's cream separators, and so on. The canvasser will not help him to sell these competing lines.

On the contrary, if he gets half a chance he will talk up the International competing lines. He may not be following any written rules or explicit instructions in doing this. It is just natural impulse and incentive to make a showing.

Furthermore, these canvassers are sent out to report on the farmer as well as to sell to him as an assist for the dealer. They must gather data on his financial standing, the size of his farm and the dimensions of his mortgage, the size of his family, the condition of his house and buildings; also and particularly, he must make inventory of all farm implements and mechanical equipment on the place and their condition.

The International canvasser is a census taker for the International as well as a salesman. By the employment of thousands of canvassers, both here and abroad, this great corporation has obtained more specific information on agricultural conditions than probably any other agency in the world. It can maintain an accurate statistical focus on the extent of the farm-implement market. It is able to card-index hundreds of thousands of farmers as prospects not

only for this year but for next year and the year after. And it is keeping just as close tabs on the farmers in Central Siberia as it is on the farmers in North Dakota.

In 1912 the branch of the I. H. C. at Omsk, in Western Siberia, did the largest business of any of its branches in the world. The Omsk sales for that year totaled $3,184,325.63.

It has been the contention of the International Company that it was organized not for the purpose of creating a monopoly of old lines of farm implements, but for the development of foreign trade and the establishment of the domestic business on a better economic basis.

There can be no question of the enormous expansion of its business in foreign fields. The increase from 1902 to 1912 was from $10,400,000 to $50,896,000. It exported 131,977 binders and reapers in 1913—more than the number of binders and reapers sold by the International Company in the United States for the same period or in any year since its formation. It is estimated that the International makes more than eighty per cent of the world's harvesting machinery.

The company has built half a score of great manufacturing plants in the foreign field to take care of service requirements and the manufacture of parts, as well as to manufacture implements complete in all their units.

It is not at all unlikely that the foreign business of this giant in the industry and of several of the surviving big rivals in the tillage line will overshadow the domestic business in the course of the next decade,

all of which should give a better toe hold for domestic expansion.

The invasion of the foreign field was begun more than a generation ago. Companies absorbed in the International, and independents that were not absorbed, had pioneered for expansion abroad with great success. Five years ago—in 1910—when the I. H. C. was being depicted as a devouring octopus, one of its smaller rivals, the Walter A. Wood Company, manufacturing harvesting machinery, was shipping more than sixty per cent of its product overseas.

Nor was this export expansion confined to harvesting outfits. American plows, harrows and cultivators, also threshers and tractors, began to be sought by foreign jobbers and to find a cash market in many foreign countries. At the end of the Civil War our implement exports totaled about $1,000,000. Growth during the next thirty years was very gradual. The 1895 total was $4,000,000. By 1900 it had jumped up to $16,000,000. This was just before the consolidation period.

Following the organization of the International, and the evolution of other big companies by somewhat different forms of combination and absorption, the foreign business almost doubled within five years. In 1910 the reported total was $30,000,000. For the fiscal year ending June 30, 1913, according to the report of the Department of Commerce, the total exports of agricultural implements was $40,572,352—more than twenty-five per cent of the total production of the industry.

It was estimated when the last census was taken that our harvester companies were doing from twenty to sixty per cent of their business in the foreign field; that the plow companies were exporting from ten to thirty-three and a third per cent of their products, and that the threshing-machine companies were shipping abroad from five to forty per cent of their output.

Since then the export business of the big companies has continued to increase—that is, up to the outbreak of the Great War. The six months following the beginning of war were gloomy ones in the industry for the majority of the exporters. The I. H. C. with its foreign factories and great international organization suffered the least.

At the end of the first year of the war prospects were brighter all round. The tillage companies were increasing their business in South America and countries outside the war zone. Companies manufacturing motor trucks and tractors capable of pulling artillery and commissary wagons got big war orders.

As for future expansion in the export field, there seems no limit to it if it turns out that central and western Europe will be compelled after the war to revise their agricultural methods. At least, there should be a far greater market for the smaller implements adapted to the smaller types of European farms. Likewise there should be a great opportunity for the utilization of the smaller types of farm tractor.

Indeed, there is more than a little significance in the recruiting of one-legged mechanics to study American farm machinery.

VIII

The Long Credit Spectre

HOW will the farmer buy aëroplanes?
He won't, you say.
How do you know? Ten years ago he looked upon automobiles as pesky contraptions. He called 'em red devils. They ran over his chickens. They bumped his cows. They threw dust in his eyes. They scared his horses. They were benzene varmints. Their drivers were idle-rich city fellows for whom hanging would have been tender mercy.

But those early-day road-burners were too costly. And they came only to him who could pay cash. You could buy plows, harrows, binders—yea, tractors and threshers—with the winged dollar, the transitory, elusive dollar that was spawned in the cornfield in the early spring and seemed likely to hatch out with the early frosts of harvest time. You promised to pay over this winged dollar provided it hatched out, and if, after it hatched out, you were able to catch it on the wing.

It was always needful to pull down quite a flock of these winged dollars, and after you got 'em down and clipped their wings you must hustle along and pay the grocer, the meat man and sundry and divers other purveyors of necessaries who might stop their credit

and put you in a nasty hole. The hired hands had to be paid, too, and the interest on the mortgage—if you had one; not to mention odds and ends of other things. Then and thereafter, if there was anything left of the blow-away flock, you paid the implement dealer.

The implement man came last. Why? Oh, simply because. It wasn't a case of must. If the implement man didn't like it he could lump it. Suppose he came up and took your tools away. Well, what if he did? You didn't need 'em till spring. You couldn't eat 'em; couldn't wear 'em; couldn't even burn 'em in the stove. If he came and took 'em, why, he could have 'em, but if he took 'em he'd never get a dollar you owed on 'em. And when spring came along, why, you could go down to some other dealer and lay in a new stock. There was no end of dealers, and they were all climbin' over one another trying to sell.

But it won't be that way when the farmer buys aëroplanes.

It wasn't that way at all when he began buying automobiles.

Nor is the tendency shaping that way as the farmer gets into the new hurly-burly of a small-farm-tractor market.

First, let us take the automobile-purchasing proclivity of the farmer apart. It is intensely interesting when you analyze it. Take it from the beginning steps. The motor came over the horizon spitting fire and messing things up. It incited dislike. Presently it incited sufficient dislike to become interesting. It engaged curiosity.

Curiosity was fanned by press agents and boomers. For a while only the very rich owned autos. After a while the not-so-rich began to acquire them. The farmer heard they were getting cheaper. He saw they were getting better—he didn't have to tow so many of them. His opportunities to laugh at the fellow toiling under them thinned away.

And in the course of time folks he knew in town began to own them. The doctors were running round in them. Pretty soon he saw fellows driving them that didn't have any special right or privilege to own them—fellows who didn't own land or much substance of any kind.

By this time the farmer's dislike of the automobile had worn itself threadbare. They certainly did fetch a person round the country some. And it was great sport to ride in 'em. Must be greater sport to run one. The germs of desire to own were sown in a fertile seed-bed by the time the automobile salesman came out to run the farmer round a bit and talk things over.

He talked a good deal and talked winsomely, but, strange to say, he didn't talk long credits. He told the prospect he couldn't talk long credits, no matter how much he loved him and how closely his folks were related by blood or marriage. Why? For the simple reason that the only way he could get a car at the freight depot was by the payment of cash on delivery. The factory couldn't sell on time, as the risks were too great. Not that the farmer was not a man of substance; that went without saying. But suppose the day after he bought his car on credit he ran it into a ditch or off a bridge or down a gully. Smash, a thousand

dollars had gone to scrap!—and instead of blaming the wreck on himself he'd blame it on the car. Furthermore, it was important for the farmer to consider that a car was a secondhand car after it had run five miles, and a secondhand car was worth only about fifty per cent of its retail price.

Absolutely nothing doing except for cash!

But the retailer of automobiles didn't ride off at this point and leave his prospect plunged in gloom. Instead, he sat down and delivered a little lecture on the art and science of borrowing. Innumerable other missionaries had attempted to inspire the man on the land with the same theory that it is better to borrow than merely to owe.

Some carper is apt to leap up here and snort: "There is no difference between borrowing and owing. When you borrow you owe; when you owe you must have borrowed."

Just a minute, please. There is really a huge difference between borrowing and just owing. When a fellow buys a plow or a mower on open account from the dealer he does not borrow; he simply owes. But when he goes to a money lender or a bank and obtains the money to purchase that plow or mower he borrows. Furthermore, he pledges himself to return the money he borrows. He gives his note, or assumes the burden of a mortgage, or puts his signature to some sort of promissory pledge to pay. And he must pay interest in some fixed amount on what he borrows. And if he is a man of substance the paper he signs has a current value throughout the district. The banks will buy that paper at slightly less than its face value,

charging a discount rate to recompense for the risk taken and apportion it toward the cost of running the bank. And here and there you will find note-brokers who discount this paper when the bank will not handle it.

Now, the dealer himself may take the farmer's note or signed promise to pay, and when he is selling costly farm implements he is compelled to do so by the branch house or factory that supplies him with implements. Having taken this note, though, he must pass it along to the manufacturer to back up his own credit. This puts the purchase on a borrowing, not merely an owing, basis, but it also brings the manufacturer into the banking business and makes heavy demands on his capital. The manufacturer becomes virtually a trust company, tying up large sums that might have been applied to expanding the essential needs of the industry. It is a superimposed burden, no matter how you look at it, and only the very strong can stand the strain. When the very strong stand the strain and the weak go down, this process of elimination adds some definite strength to the very strong by withdrawing just so much competition.

In the implement industry the very strong were building up bone and sinew for half a century. By comparison the automobile industry was a tropical growth. New blooms were coming to flower every night on mighty slender stems. There was barely enough capital available for the purposes of manufacture, distribution and advertising. There was no surplus on hand to enable the manufacturer to engage in banking on the side. He simply couldn't hold the

bag for the distributor and retailer. If he couldn't get cash on delivery he would have to shut down. He couldn't pay the interest on borrowed capital, buy raw material and pay wages. And, as I have emphasized before, his product was far more costly and perishable than farm implements.

The dealer-salesman or salesman for the automobile dealer may not have explained all this to his farmer prospect, but he did make himself emphatically clear on the point that if the farmer were to buy a car he must plunk over the cash out of his own wallet or go to some other fellow and borrow the cash.

And tens of thousands of farmers borrowed the cash to purchase automobiles when dynamite wouldn't have moved them to borrow the cash to pay for farm implements. They borrowed from banks and they borrowed from usurers; they sold cattle and horses; they plastered their meadows and homesteads with mortgages.

When this wave of auto buying for cash in the country set in, the implement manufacturers were more than amazed. They were stunned. Here was a new competitor they hadn't figured on—a competitor selling luxuries for cash, when they were compelled to sell necessities on long time. The selling of talking machines and pianos to the farmer was a trifling menace by comparison. Furthermore, the piano and talking machine, as the sewing machine which preceded it, were sold on installments—a few dollars down on delivery and at the most a few dollars a month. The poultry on the farm could take care of these items, but the borrowing of $700 to $1500 in cash was a

margin of expense that the American hen couldn't take care of if she laid her blessed head off.

How was this automobile menace met? Well, it wasn't exactly met—that is, so far as domestic trade was concerned. There didn't seem any direct, tangible way of meeting it. The gasoline pleasure car was burning its way out to the farm like a prairie fire, and the implement people simply stood aside and let the fire roar and race.

Here is a little inventory of what one of the biggest men in the implement industry offers as his idea of a necessary equipment for the average 160-acre farm:

1 14-inch gang plow	$ 60.00
1 14-inch walking plow	14.00
1 3-section harrow	18.00
1 7-foot disk harrow	30.00
1 corn planter	42.00
2 riding cultivators, at $26	52.00
1 grain drill	100.00
1 6-foot mower	50.00
1 sulky rake	25.00
1 grain binder	125.00
1 farm truck	30.00
1 farm wagon	100.00
1 wind mill	25.00
1 manure spreader	115.00
Total	$786.00

The total is approximately the average price the farmer has been paying for his automobile—paying cash. Also it is approximately the average price of the new small tractor, which also, in the beginning stages of its merchandising, must be sold for cash.

The question comes up: Can the average 160-acre farm, or even the average 200-acre farm, support its necessary equipment of farm machinery, an automobile and a small tractor? If so, who's going to get the cash?

The farmer, having paid cash for both automobile and tractor, will pull in his purse strings tighter than ever when it comes to the purchase of farm implements—no matter on what terms they are offered. And if the implement business gets itself on a cash basis he will buy still less than he might have bought on credit. This would seem to be a logical assumption.

Not infrequently there are flaws in logical assumptions if you don't take them apart a bit. Say the farmer has bought his automobile as a pleasure vehicle, and also as a very serviceable aid in getting about the country on necessary and important errands. He can use this automobile regardless of what farm implements he owns. His sons can drive it, so can his hired men, and very likely his wife and daughters will learn to run it. It is not a personal luxury or a personal necessity, but a family luxury.

But when it comes to taking on a tractor the case will be very different. There must be equipment at hand to make the tractor serviceable, to make it worth while from any angle. Unless it can pull a variety of tillage tools and harvesting machinery, provide power for corn shredders, corn shellers, silage cutters, cream separators, and divers other apparatus, it is going to be a good deal of a white elephant.

IX

Auto-mania on the Farm

THE hope is entertained by optimistic leaders in the farm-machinery industry that the farmer will soon recover from his automobile-buying mania, or at least will open his eyes to a preference for farm machinery and tractors over automobiles. Having found that his new runabout toy cost him much more for maintenance than he counted on, and that it failed to bring in a cent of income, he should be in a susceptible frame of mind when it came to tackling him on the proposition of buying a tractor or keeping up his farm equipment.

This is a happy thought, but when I told it to an automobile salesman he smiled on me pityingly and replied:

"It works out that way only in the Rollo books. Once a car owner, always a car owner. City man or farmer, it makes no difference. Now that we've got the buzz-wagon down to the farmer's price, he's sold to the idea of horseless transportation for all eternity. He's paid out his share of the $250,000,000 spent on good roads during 1915, and you may bet the last little copper in the bottom of your jeans that he isn't going to sit 'way back on the homestead piazza and watch the other fellow wear out those good roads.

He needs those good roads to haul his stuff to market and he and his family also need them to spin round on to see the country and visit the friends and neighbors.

"And here's another little thing to speculate on," said the automobile prophet. "The gasoline vehicle did more to bring the farmer good roads than any other single agency. Also, the good roads that have been built out into the country have added more value to the farm than the farmer has so far spent on automobiles. The farmer buys a car and votes for good roads, and when the good roads come they pay for the car and lift a mortgage or two off the farm."

"But surely," I interposed, "the novelty of having and running a car wears off in a good many cases."

"Oh, yes," he returned, "possibly ten per cent of the farmers may lose their enthusiasm, but not so the good wife and the kids. The novelty doesn't wear off for one family in a hundred or for one family in a thousand. Novelty on the farm is a pretty scarce article and once you plant it in the shape of a little old last year's car it takes root and flourishes and won't be pulled up or torn down save by cataclysm, holocaust or flood."

Pertinent to this observation was the remark of one of the biggest men in the farm-implement business. He said:

"To illustrate the sort of snag the automobile has been in our path I'll tell you the case of Smithers, who may be any one of a thousand salesmen that are pushing our line.

"Smithers has looked round the farm and sized up the low state of the mechanical equipment. He has

talked Farmer Rice up to the buying point and is just about to clinch the sale when Mrs. Farmer Rice rustles out of the kitchen and butts into the conversation.

"'John,' she says, 'remember your promise. You don't need a new binder and you don't need a new manure spreader. You said yourself you could patch up what you've got and make it do for another season. And we *are* going to get that automobile.'

"'Well, I guess that's so,' says John. 'Sorry, Mr. Smithers, but I won't order any more machinery now. Come round again next season.'

"And if Smithers goes round next season he'll probably find that Farmer Rice and Mrs. Farmer Rice and all the Rice kids are cruising round the country in their car."

"But don't you think," I asked, "that the automobile has educated the farmer in mechanics sufficiently to awaken him to the advantages of better farm machinery? Also, isn't the care of a car teaching him something of distinct value in regard to the care of his farm machinery?"

"To some extent, but the influence for good will be very gradual, also very vague, like all overthrows of habit. You won't be able to point it out or to put your finger on it. The man who has courage and conviction to look far ahead may bank on it to advantage, but he will be the hundredth man. Few if any of us can gather any rainbows from the automobile industry today.

"We should like to figure it out this way: The farmer wants an automobile, but can't afford it. He could afford it if he would raise more and better crops.

He could raise more and better crops if he had better mechanical equipment. With the profits from more and better crops he could buy his automobile.

"Could anything in the realm of logic be clearer and simpler? Farm machinery, a necessity, actually part of the farmer's factory equipment, should be paid for as a fixed charge on the farm. The automobile, a luxury, should be paid for out of profits or surplus.

"But the way it has been working out is the diametric reverse. The results are psychological rather than logical, sentimental rather than sensible. Long credits may be the root of this evil that has come upon us, but it is going to be a master job to tear up those roots and insert in their place something big enough and strong enough to maintain the great expansion of our industry."

"But surely he is gaining knowledge all the time on how to finance purchases to his advantage on a cash basis?"

"Another theory you cannot accept on its face value. The American farmer is the best long-time-credit getter in the known world. He would not have acquired the habit of paying cash for automobiles could he have obtained them on credit. And the time may come when he will be able to purchase his car on time from some manufacturers who feel inclined to take the risk of long credits. The leaders have made enormous profits and have piled up big surpluses. The change will come when they have reached the saturation point in feeding out automobiles on a cash-purchase basis.

"The big makers have expanded tremendously on production. Just as soon as their cash market slows up they must devise some other means of pushing out their product. Voluntarily or involuntarily, they must kill off competition. In the farm-implement industry the little fellow has gone down because he couldn't stand the long-credit game. In the automobile industry practically the same thing will happen. In my judgment there are not the possibilities of foreign expansion in the automobile industry that there were in the farm-implement industry. (The great export automobile business during the European war was abnormal.) Foreign expansion and the killing off of small competitors have kept us alive."

"If the automobile industry comes down to a basis of long credits, will not the competition with farm implements be keener than ever?"

"If it were possible to bring the automobile industry down to the same basis of long credits on which we are operating there would be occasion for great and increasing gloom. But the automobile can never be sold as we are selling tillage and harvesting machinery. The automobile is too risky and costly a product, even at an average price of $500. I don't believe the manufacturer will be able to ship autos out on consignment; certainly the dealers will never be able to sell them on open account.

"Automobile manufacturers have begun to finance intermediary money lenders—a sort of banking institution that will lend to the purchaser and split commissions with the dealer, charging sufficient interest to cover possible losses from bad accounts."

Since I had this little talk time-payment plans for the financing of automobile sales have come into a good deal of prominence. For several years, in all the big cities, there have been private concerns lending money to automobile purchasers on their notes, but the business these concerns have been doing has been comparatively insignificant—that is, speaking for the country at large. An exception should be made in the case of California, where the installment method of sales has made big gains in the past few years, with the result that at the beginning of 1916 it was said almost fifty per cent of the automobile sales in the Golden State were installment-credit sales.

We now learn that half a dozen leading automobile manufacturers have taken hold and begun to back these installment-selling schemes with millions of capital. The manufacturers have really directed the devising of a brand-new credit vehicle, which has been planned with great care for the special purpose of expanding the volume of sales.

As an example take the case of a Detroit credit sales company launched in November, 1915. Its chief function is to afford discount facilities for the automobile dealer. This is how the plan works out in the purchase of a $750 car:

The prospective purchaser stipulates with the dealer to pay $775 as a time price. The purchaser then fills out a form in which he states the particulars of his responsibilities. Then he signs a chattel mortgage, stipulating that if he fails to keep up the payments on the car the dealer is privileged to foreclose and repossess the car. Having signed this mortgage the

purchaser further commits himself to payment by signing eight notes: A one-month note for fifty dollars; a two-month note, a three-month note and a four-month note for sixty dollars each; a five-month note and a six-month note for sixty-five dollars each; a seven-month note and an eight-month note for seventy-five dollars each. The total in notes is $510, the ten dollars being a supplemental interest charge.

Having acquired these notes the dealer turns them over to the securities concern to be discounted. Remember, in the first instance the dealer has taken up the bill of lading on the car shipped to him by the factory or branch-house distributor of the factory and has paid cash to the extent of $630, which makes the commission to the dealer, on paper at least, $120.

The installment purchaser has paid him $275 in cash, but twenty-five dollars of this goes to the securities company to cover insurance and what you might call risk interest. There is too much complicated bookkeeping to explain all this. The dealer doesn't send on any of his cash, however. What he sends is the $510 in notes. The securities company discounts these notes, charging a discount fee of $7.50. Then the securities company deducts the twenty-five dollars insurance and interest charge. Furthermore it deducts $100 for what is called a "deferred certificate." Altogether, then, the securities company takes out $132.50 and sends the remainder in cash to the dealer. With this remainder goes the "deferred certificate."

This "deferred certificate" is virtually a promise by the securities company to pay back $100 to the dealer when all the installment notes have been paid.

But it is not necessary for the dealer to stick this certificate away as idle paper, convertible into cash only after all the notes have been paid. He may indorse this certificate and return it to the securities company to be discounted at five per cent. Following this process out to the end, the dealer has obtained in cash the installment price of the car less twenty-five dollars for interest and insurance, $7.50 for discount charges on the note and five dollars for discount charges on the "deferred certificate."

It should be of interest to both the farmer and the implement manufacturer to learn that in the case of sales to farmers the dealer cannot discount the "deferred certificate," but must hold it until all the notes are paid.

There is also a separate installment plan for farmers, by which payments on the farmer's notes are deferred till harvest time, an arrangement somewhat similar to the long-credits sales by the implement manufacturer. The important difference is that the manufacturer is not holding the bag for the dealer.

X

A $200,000,000 Burden

"IF ZEBRAS laid eggs and hatched out giraffes it'd be mighty surprisin'," quoth Lon the Pessimist, "but it wouldn't be nary a bit more surprisin' than if Jed Peck, Wilbur Smith, Ted Willys and Old Man Proudfit walked into my store and plunked down cold ringin' cash for four ridin' plows, then backed up their wagons to my door and carried them plows out and loaded 'em on board. No, sir; that sort o' transaction would stump me total deaf, dumb and blind and call for me to hobble round on crutches or else take to my bed with ager and chills.

"An' what's more, ef I should take that cold ringin' cash, pile it up neat on the counter and then deduct my bit of profit an' sweep it into the till, and then and thereafter pack the big remainder of that clankin' coin into a package an' ship it post express to the implement manufacturer, it ain't to be reckoned on what would happen to the mind, soul an' body o' that same implement manufacturer. It'd just bust him crosswise an' blow him into powder.

"But it won't never happen that way," concluded Lon the Pessimist. "Not on the basis o' present prices o' farm implements an' present methods o' forcin' them into my hands when I ain't none too

anxious to stock up with 'em, knowin' there's no eager, immedjut demand for 'em like in the case of bakers' doughnuts and soft crullers.

"Cash for farm implements is not comin' voluntary from Jed Peck and Old Man Proudfit to my counter—leastwise not in this yere mortal period while I can buy 'em on time and sell 'em on time. The cash-payment idea has got to be worked out up in the factory and then put over under stiff pressure or else you'll never see nothin' to resemble it in your day or mine."

This crude philosophy comes mighty near puncturing the bull's-eye. The great threatened crusade for shortening credits is not coming from the farm. If it is coming from anywhere it must come from the manufacturer. He must provide the band and marshal the forces to put it over. And it must be a concerted effort, a get-together movement. Big as some of the great implement concerns are, none is big enough to tackle the job alone.

If they could all get together in a cozy little party and fix prices and divide up territory and exchange credit lists of dealers and cut out oodles of waste due to frenzied competition their problem would be a mighty soft one, seemingly. But there are many obstacles in the way of this.

There are Federal laws and state laws that would deny the privilege of holding such a love feast and putting through such a serene plan. And it is mighty well for the farmer, the dealer and the small competitor that there are certain and specific legal lets and hindrances to too much combination and monopolization. If big men would only use big power in a big,

broad way things might be different. But they don't, and are not likely to until the golden dawn of that Golden Age when the Golden Rule shall be the most natural of human impulses.

In discussing the problem of shortening credits for farm implements down to a cash basis, you don't quite get anywhere beyond the vague notion that it should be done, but isn't. All agree that it is vitally important, but, like so many vitally important things in life and government, it must be come to gradually.

Discussing the subject with C. S. Brantingham, president of the Emerson-Brantingham Company, I found that he was hopeful of a remedy, but that he was naturally cautious and diffident on the score of letting his optimism run away with him.

He had prepared a paper for the manufacturers' convention in which he suggested the great need of a remedy, but offered no plan. He said:

"There is employed in the farm-machinery business today more than enough capital to finance the business as other businesses are financed, and not borrow a dollar except possibly during the spring season. Almost every farm-machinery manufacturing concern that is sound financially has nearly two dollars of receivables for every dollar it owes, also has one dollar of inventory for every dollar it owes, which makes it a good, strong financial risk.

"Yet more than $100,000,000 of borrowed money is used by the farm-machinery manufacturers to carry on their business, while they are extending credits that aggregate nearly $200,000,000, half of which is wholly unnecessary.

"The elimination of one-half of these credits—approximately $100,000,000—will easily and readily finance the farm-machinery business and is in fact the only true, sound, practical solution. If acted upon in earnest by all the members of this [manufacturers'] association it will place the credit of its members high in the preferred class and make the industry the strong, sound, basic industry it is, and relieve a tremendous strain from the men engaged in the general management of the business.

"*It will enable them to sell their products cheaper to the farmer.*

"The proper place for farmers to seek credit is with their local bankers, who have increased in number and strength in their various communities and are today prosperous.

"If the farmers would seek this credit from the local bankers, and the local bankers should give it, the local bankers could then employ their funds profitably at home instead of going to the cities to buy commercial paper—often commercial paper made by the farm-machinery companies to raise funds to carry credits extended to farmers.

"The funds in the country banks are today largely deposited by farmers who were former borrowers.

"A shortening of credits would encourage good men to remain in the retail implement business and would discourage and eliminate the poor ones who establish themselves on this credit system.

"If manufacturers, dealers and farmers will give this question serious consideration they must admit that farm machinery should more properly be sold

for cash than any other product, for it is actually the foundation of almost all wealth.

"The practice of carrying unsold goods from spring to fall and from fall to spring is not practised by any other standard industry and is unsound in principle.

"It all goes to *promote overloading the dealer and forcing on the farmer what he does not need.*

"It causes overexpansion of factories and straining of credits. In the long run it does not increase net profits.

"In former years farm-machinery manufacturers listened to the argument that the farmer needed time until the crops were harvested to obtain the funds necessary to pay for his machinery.

"The automobile and farm-equipment manufacturers, in establishing their business, have taken a different view and have proved conclusively that the farmer does not need this long-time credit. Has he not shown his ability to pay cash for his automobiles and other purchases when required to do so?

"If we continue the long terms of the past it means that we are using our capital and credit to help finance those shorter-term lines. A shortening of terms more nearly to a cash basis will bring the dealer's prices more nearly to those of the catalogue houses, which are doing farm-machinery business on a cash-in-advance basis."

"An immediate shortening, making full correction, may be unwise, but a gradual shortening of terms along sensible lines so that a full correction could be obtained in two or three years would be of the greatest possible benefit to all concerned.

"The farmer should not only welcome and join in this readjustment, but should insist that the industry upon which he depends for his equipment with which to feed the world should be furnished him on the most economical basis possible, which we all know is cash or its equivalent.

"If our Government desires to assist the farmer let it do so by permitting the manufacturers, dealers and farmers to enter into agreement for the purpose of correcting this system, and lead in a campaign of education to bring about this result."

Mr. Brantingham added the further suggestion that the manufacturers themselves appoint a strong committee to devote their energy in the direction of rounding out some remedy to relieve the curse of long credits.

All the big implement men I talked with expressed the belief that the country bankers could help a lot if they only would. It was pointed out that the country banker helped in the automobile game by lending the farmer money with which to make cash purchases. It was not pointed out that the country banker was more or less of a passive instrument in financing the purchase of motor cars for the farm. Nor was it mentioned that one automobile manufacturer sent millions of dollars in cash to the country banks in one state to finance the purchase of cars.

This manufacturer did not specify when he loaned this money to the country banks to be reloaned to farmers that the money should be provided only for the purchase of his own cars. He was able to estimate from statistics gathered by his sales forces that his

make of car sold two to one over any other make in that territory. If the lending of money to the country banks would greatly increase the sales of his car in that state, he would reap the major benefits. His profits would be so great that he wouldn't have to worry about the small benefits his rivals might obtain.

To be sure, this was an exceptional case. The manufacturer who poured those millions into the country banks at a low rate of interest had made enormous profits and had piled up an immense surplus. Moreover, he was selling a standardized product at a standardized price.

He made one price to all his dealers and protected them in their assigned territory. He had no fear of imitative competition. His business organization had been built up into a great, solid, simplified structure. And the car he made was as well known as the first stanza of the Star Spangled Banner.

Mr. Brantingham urges that there is an unnecessary $100,000,000 tied up in long credits to the farmer. How much of this $100,000,000 is carried in open accounts by dealers of questionable solvency it is impossible to determine. Undoubtedly a considerable slice of it will never be liquidated into hard cash. These losses must be made up somehow. The farmer must bear his burdensome share of them or the implement industry could not go on.

If the farmer could only be made to see what his solid-ivory habit of owing, whether he needs to owe or not, is costing him it would not require an endless process of experimental readjustment to convert him to purchasing for cash.

But there is too much confusion of standards in the implement game to permit him to see clearly. To begin with, quality standards are a pretty sad muddle, and price standards are a sadder mess.

With no price standards hitched to quality standards, how can the farmer be expected to obtain more than a blurred vision of the product he is purchasing?

XI

The Sins of the Dealer

SOME manufacturers will tell you that the dealer is to blame for the price muddle. They say that the dealer who is shrewd enough to take advantage of cash discounts can fix a standard price low enough to meet the competition of the catalogue houses, cooperative buying clubs, or any other competitor that may bob up. They say also that the dealer who organizes his business efficiently and makes intelligent use of service facilities offered him can maintain standard prices and at the same time earn splendid profits.

Many dealers who are disinclined to take advantage of cash discounts return that this sort of argument is all rubbish.

They declare that cash discounts are arranged all in favor of the manufacturer; that the discounts are so small as to be insignificant, and that if the dealers paid cash in advance of the sale of the implements they purchased, they would find themselves with a lot of dead merchandise on their hands. They argue further that no cash discounts that are worth bothering about are offered unless a dealer overloads himself with stock it is a natural impossibility to sell.

Theoretically, the dealer who stocks up with a carload order at a time can save considerable in freight charges. The theory has worked out profitably in the case of the dealer who knew just what to buy in the way of additional lines, and who was able to ascertain from his bookkeeping the cost of handling and selling.

The practice of foisting upon the dealer additional implements and jobbed side lines that the territory offered no call for has been insidious in the extreme. The saving in freight rates has been swallowed to the uttermost farthing, and left deep in the red by carry-over charges and depreciation mildew. In thousands of cases the result has been a further extension of credits rather than a shortening of credits.

You would think, to hear a great many manufacturers discuss the situation, that consignment and carry-over clauses were an invention of the dealer, instead of an inherent fault due to overloading and overselling, failure to standardize quality and prices, and the multiproduction of sizes and varieties for which there is no sane excuse.

That wild-eyed little old whirling dervish, F. Competition—the F. for Frenzied—is the excuse offered to explain away all of these sad-eyed specters of long credit. The manufacturer groans every time he learns that one of his dealers is selling automobiles for cash to farmer customers—the same customers who walk into his store and help themselves to plows, harrows and cultivators on time, in open account, with nary a scrap of paper to record the transaction.

Many a dealer has been able to knock down handsome cash profits from cash sales of automobiles simply

because he was able to take in farm implements on consignment with two fall datings, less a cash discount and six months' additional net. And the dealer will keep right on doing this as long as he can get the extension.

Take the dealers through the South at the time Europe burst into flame and the price of cotton was shorn 'way down below production costs overnight. Thousands of dealers were stocked to the straining point with cultivating implements and all manner of tools, waiting for Mister Cotton Farmer to come in and cash his cotton to pay for last year's purchases, and thereupon, having paid for last year's purchases, to stock up again to the limit of what he expected to raise in the way of cotton the following season.

But six-cent cotton wouldn't wipe the slate clean, wouldn't more than half cover all the divers and sundry obligations of debt. There were items for food and items for clothing; items for harness, items for hardware, items for candy and for tobacco; items for oil and occasionally items for grease, gasoline, spark plugs and tires; lastly there were items for farm implements.

When Mister Cotton Farmer made his fall settlement of fifty cents on the dollar to the merchant, who got the money? The merchant, in the primary instance, but the merchant in his turn owed everybody. He owed for his food products, for clothing, for hardware, for every possible item he could owe for. He did not owe for gasoline and oil. The Rockefeller family collects every thirty days. Certain of the food purveyors collected in sixty or ninety days, or else

shut down on the account. The clothing wholesalers also got what they could in sixty or ninety days.

So it went on down the line till it came to the implement man. He was easy. There were no hungry mouths or goose-fleshed limbs or panting motor wagons crying for his product. Then he was of immemorial custom and habit patient. Maybe he got a nickel out of that shabby, war-bitten four-bit piece. Too often he didn't even get a glimmer of its existence.

When all the cotton had been cashed in and Mister Cotton Farmer still owed heavily on last year's account, the merchant he owed began to utter gloomy forebodings and also began to readjust his next year's credit scales. He allowed he would have to extend further credit for the winter's food supply, for a reduced supply of clothing, and so on.

But when it came to farm implements, he advised the farmer to get along the best way he could with the carry-over tools that were kicking round the farm. The farmer and his family thought so too. Hence there was the slimmest sort of picking for the implement salesmen when they set out to push the usual seasonal quota for the South.

The market wasn't there, notwithstanding the benevolent processes of distribution. But the factories were all gaited up to the production of this quota. If the Southern market would not take it, it must be unloaded somewhere. Here was a big problem for the sales manager—an immediate need for expanding into new territory. Some of the big concerns sent flying squadrons into South America and blazed new expansion trails in that direction. Other

big concerns kept eagle eyes open to catch sight of some tottering small competitor whose territory might be invaded and gobbled. Some smaller concerns that were able to slow up managed to curtail production.

During all these periods of depression you will hear the honking wail of the dealer. Particularly you heard his plaintive cry in the South during the fall of 1914. Business had gone to the eternal or infernal bow-wows.

Yet he didn't go down in any extraordinary number, notwithstanding his uneconomic method of doing business. Why? For the simple reason that he had charged for his goods all the traffic would bear—one hundred per cent and often two hundred per cent profit. He had to, he proclaims, to carry his end of the gamble. He was selling merchandise against the possibility of collecting money for it a year hence. He was paying long-credit prices for his merchandise and in addition to that was assuming risks that were highly speculative. There was the cost of doing business, his living expenses, his luxuries, some surplus that might be lent out on bond or mortgage or invested in cotton land. The merchant who could lend money at twenty per cent was not going to pay cash for the sake of any ten per cent discount, and very frequently in the South it is possible to lend money at forty, fifty, sixty, eighty or one hundred per cent.

The Comptroller of Currency recently revealed that more than 600 Southern banks charged on some of their loans twelve per cent and up, that sixty-seven banks had a maximum loan rate of from twenty-five to sixty per cent, that twenty-two banks charged between

sixty and one hundred per cent, and twenty-six banks had a maximum rate of one hundred per cent or more. These were national banks, mind you, not state banks or private banks, or local usurers of the Uriah Heep stamp.

I have met merchants in the South who told me frankly that they never paid up on an account until the last possible minute. When they could make one hundred dollars in cash earn fifty dollars cash in six or eight months, why send up that hundred dollars cash to some implement manufacturer or implement jobber just for the sake of a miserly ten, fifteen or even thirty dollars cash discount?

The manufacturers feel that they have played banker long enough for the dealer—that is, they tell you that is the way they feel about it. So far they haven't felt sufficiently strong about it to pull in their credits to any great extent. There is that elusive, tied-to-a-long-leash $100,000,000 which they could use in their business to great advantage. The farmer is holding out his share of it and the dealer is holding out his share of it, and both are paying heavy interest rates on it if they would only take the trouble to figure it out in simple arithmetic.

There is an immense amount of ignorance and folly involved in this long-credit scheme of merchandising. The manufacturers admit they have made mistakes—and then shift the burden of responsibility by putting it up to the dealer and his slipshod methods of doing business. The dealer splits the buck in two and passes half along to the manufacturer and half along to the farmer. Over and above this the dealer has a special

grievance against the catalogue house and the new movement to organize coöperative buying clubs.

As for the farmer, he has had very little to say. He has done a lot of wood-sawing and quiet thinking, however, and in some unknown, mysterious way gets together sufficient cash every year to buy three or four hundred million dollars' worth of automobiles, gasoline engines, stoves, hardware, steel roofing, furniture, talking machines, silos and pianos.

More and more the farmer has been learning to buy for cash what he cannot buy any other way than for cash. He has followed his individual bent in this direction. The bankers have helped him out a little, but not any too beneficently—with, of course, numerous exceptions in the case of progressive bankers who have made it their business to study farms and farming in its present-day aspects.

XII

Lack of Quality or Price Standards

"THERE'S too many animiles," said an Arkansas philosopher who never in his life leaned against anything harder than a line of least resistance. "There's too many superflu's animiles for any use. If a feller could only have a mule that'd bark like a dog, give milk like a cow, cut up into beef on one side o' him and into pork on t'other side, it'd jest save tremendjus in the labor an' expense o' farmin'."

This is the sort of dictum you might expect to emerge from a furze of knotty and tangled whiskers that still luxuriate in timbered valleys or on bleak hill-knobs. Yet the idea contained has been applied to the retail-dealer situation by more than one manufacturer of farm implements.

There are too few of what you might call general-efficiency dealers. There are too many nondescript, hit-or-miss dealers who really never had any business in trade and whose days in trade are numbered from the moment of their entrance into business.

But the nondescript, happy-go-lucky, let-it-go-at-that type of dealer is passing. Harvesters of statistics in and out of the trade have the figures to prove it. The modern efficiency pace is grinding him out, but not by a swift, relentless process of annihilation.

There is no vanishing point in sight. Elimination is necessarily a slow weeding out—far too slow to please the big implement manufacturers. They would like to see a new race of live-wire dealers born overnight, sprung up like Jason's warriors from an efficiency seed bed, every one of them a keen, sharp business man amply provided with capital.

But they will wait in vain for this sort of magic. Given the power to perform the miracle themselves, they would lack the nerve. They have used the so-called "incompetent" dealer in their business for many decades and seemingly have thrived on him. They have kept tabs on his inefficiency and reckoned the averages of his failures. But he has served them mightily in their methods of expansion.

That was during the age of long credits.

Now that the age of long credits is said to be receding down a dim vista, the farmer-agent or agent-farmer, the drive-about, gad-about "merchant" with no store or stock, must be relegated to the discard. And with him must go the little desultory storekeeper who has no more use for system and method in his business than a banker has for wooden money.

If you are discussing the dealer problem scientifically you must class these likely discards as the unfit. If you are taking up the subject on a basis more human than scientific you might class them as unfortunate or unadaptable or misguided or something of the sort. There are grades and degrees of unfitness, as there are grades and degrees of misfortune and unadaptability. From any and all standpoints there is room for controversy.

There are some facts, however, upon which we can put our fingers and through which we can drive spikes to keep them where we can see them and ponder on them. According to a 1910 estimate, there were in the United States at the beginning of this decade approximately 45,000 dealers selling farm implements and hardware of infinite kinds, qualities, styles and patterns. We will use the term "dealer" as a means of general classification, including the big and the little, the fit and the unfit retailer; also including all the heterogeneous collection of dealer agents.

We learn that about 10,000 of these dealers fell by the wayside in five years. At least, they vanished from the lists. An up-to-date census of dealers, we are informed by an authority on the subject, would include only 35,000 or so names. And not more than 20,000 of the present-day list of 35,000 dealers are what you might classify as "regular merchants," possessing tangible capital to do business on, carrying stock and repair parts and rendering service.

This gives us about 15,000 dealer agents. Five years ago, out of 45,000 dealers of all sorts, approximately 25,000 were dealer agents. This would seem to give us the simplest sort of sum in addition and subtraction. No need to get out pad or pencil. You have it in a flash that the vanished 10,000 were dealer agents. It also seems to figure out neatly that the 20,000 dealer merchants who were doing business five years ago are still in business today.

But it is not so simple as that. Of the twenty-five per cent of dealers of all sorts who go out of business every year, a considerable percentage are in the

so-called merchant class. Likewise there are many dealer agents who graduate into the merchant class and thrive. I could name a dozen of these whom I know personally in a dozen different states, every one of them a live-wire hustler.

If you ask an implement manufacturer why so many hopeless or foredoomed-to-failure dealer agents came into the field he will reply promptly:

"There were not enough good dealers to go round."

The manufacturer could not wait for the education, training and trying-out of retailers. He was hitting up production at too fast a clip to afford to dispense with the little dealer. The excess product had to be sold. When the established merchant was stocked to the guards there was still a big surplus to dispose of. So "salesmen" were picked up helter-skelter and sent out scouting for business among their friends and relatives.

Several years ago it was estimated that 70 per cent of the dealers were former farmers. This included all types. As to the process of developing former farmers into dealers, here is a pithy commentary on the subject by a man who made a careful investigation of the implement industry:

"Farmer Jones sells his farm and comes to the city to educate his children and enjoy the advantage of urban life. He soon becomes restless and seeks employment. He knows nothing about general merchandise, but he thinks he does know something about agricultural implements. It is easy to get started. In fact, some implement solicitor may have offered the suggestion to him.

"He soon has a stock of goods in hand, received on varying terms that are confusing, but he says to himself:

"'I can't quite remember all these terms; but in general, I can sell the goods first and pay for them afterward.' He does not know how to figure overhead expense. If he sells a forty-two dollar machine for forty-five dollars he is apt to think that he has made three dollars.

"Meanwhile he takes his living out of the business. The credits are so long and settlements are so easily evaded that he probably loses all he has before he realizes what is happening, and then another farmer moves in from the country to take his place."

The flat statement that there were not enough dealers to go round cannot be accepted entirely at its face value.

From the farmer's outlook there seemed ample dealers to go round. Even in tiny hamlets there seemed a surplusage of dealers, some carrying one line and some carrying another.

But if the farmer had looked into it he would have discovered that the dealers he knew and dealt with represented only a scanty handful of the little army of competing manufacturers. If a competing manufacturer saw rich possibilities in any district he immediately planned an invasion of that district. If the established merchant dealers were stocked up with other lines in such a way that they could not afford to take on a new line the invader resorted to the simple method of appointing a farmer-agent. Often he persuaded some retired farmer to invest his capital in a

store, extending him liberal credit to aid him in launching the enterprise.

A large percentage of these "new beginners" were bound to fail, but they were also bound to make some sales. Friends and relatives would buy from them for a while. And when they failed the chances were even that some other fellows could be brought in to carry along the line and the business until they, too, got up against it because of unbusinesslike methods and general unfitness as merchants.

The manufacturer didn't always get his money back, but he managed somehow to stiffen up his prices so as to stand the general average of losses. The bigger the organization behind him the smaller the average of losses from this method of merchandising; also the greater opportunity of crowding out other lines and taking possession of the established merchant dealers.

When such great concerns as Deere & Company had taken on a multiplicity of allied lines they were able to present a new argument in merchandising economies to the dealer, an argument which you might call the carlot inducement. They could prove by the simplest sort of mathematics to the dealer who was buying a dozen different lines from a dozen different manufacturers in widely scattered localities that there must be a distinct advantage in buying all these lines from a single purveyor, who shipped from a single branch-house point of distribution or from a centrally located factory.

This sort of merchandising, naturally, excludes the farmer-agent, and no doubt it assures definite economies for the dealer. There is, however, an always-

present danger of overloading. The dealer who is pretty sure to benefit by the available economies is the dealer who can estimate his selling costs accuately and who handles his credit arrangements with customers along systematized lines. This is taking for granted that he has skill in pushing his wares.

XIII

Sir James, Jim and No-'Count Jimmy

THE problem of retail prices has always been more or less of a perplexing puzzle—too frequently an unsolvable one for the general run of dealers. An inexperienced dealer has little or nothing to guide him as to what retail prices should be. He is a babe in the woods when it comes to figuring selling costs. Nor has he more than a vague notion of quality standards.

Wholesale prices are maintained firmly if not inflexibly by the large companies and may be said to be pretty well standardized. Quality for quality and freights considered, there is very little variation in the wholesale prices of old, staple lines. Though every separate implement made may have some specific selling point, when you get down to the raw basis of comparisons there is little difference in the quality and the prices of staple goods.

But when it comes to retailing farm implements the situation has been and still is to a large extent vastly otherwise. The dealer who figures anything above the wholesale cost as a profit soon sells himself into bankruptcy. The peddler who carries his wares in a pack on his back and sleeps under a roadside hedge or in a convenient haymow or barn can adopt this primitive

method of merchandising and get away with it, and now and then the farmer-agent may eke out a precarious existence on roughly calculated profits. But no merchant dealer can ever know where he stands unless he adopts system and careful bookkeeping and can distinguish between a real and an imaginary profit.

It often happens that profits on the same machine in the same county will vary from fifteen to twenty per cent.

Say Farmer Riddle goes to Dealer Jones and gets a price of twenty-five dollars for a fairly well-known staple implement. If Farmer Riddle is at all given to shrewdness he will look round a bit and see if he cannot beat that price. He will drop in on Dealer Green and tell him that Dealer Jones offered him a price of twenty-three dollars. If Dealer Green is anxious to sell he will meet the cut and go it one better, bringing the price down to twenty-two dollars. If Farmer Riddle is a persistent cheapener and doesn't care how he squanders his time he'll hunt up Dealer Jones again and tell him that Dealer Green has offered to sell the identical implement at twenty dollars.

If Dealer Jones is a greenhorn and can't see through these little subtleties he is very apt to let the implement go at twenty dollars, though it cost him nineteen dollars.

He may make mental note that he is a dollar ahead on the transaction, when as a matter of fact he is about three dollars behind—that is, figuring that his selling costs were somewhere in the neighborhood of twenty per cent.

Dealers and manufacturers say it would be impossible to attempt to standardize retail prices, just as it is impossible to standardize character and solvency in purchasers and business ability in dealers. If a dealer is selling two identical articles at the same time to two different customers he is very likely to make two different prices because of the different characters of the customers.

He knows Farmer X to be entirely solvent and able to meet his obligations whether his crops are bumper or otherwise. In the case of Farmer Y he believes that anything he sells him on time entails a definite risk. So, to square the equation, he makes the price ten dollars to Farmer X and fourteen dollars to Farmer Y.

Down in Mississippi I met a small country merchant who sold to a little community of cotton growers a line of "watch-charm" plows and "manicuring" cultivators. The cotton growers were all more or less in debt to the merchant. Some owed more than others. Some were lazier than others. Some had large families and some had small families. Some were newcomers and had the moving habit. Some were drunkards and some were sober and fairly industrious.

"I got 'em all listed as risks," said this merchant, "and I charge 'em for these plows according to the risk. Sometimes I get fifteen or twenty different prices for the same article."

"And the fellow who is hardest up and able to pay the least pays the most?" I asked.

"Sure thing," he replied.

"And yet you wonder why these same fellows turn handsprings and utter war whoops when they get

hold of a mail-order catalogue and read off the standardized prices for cash sales."

"I'm not worrying about catalogue houses," he returned. "If any of my customers catch up on the books and get a little cash ahead you'll find me right round when the coin begins to clink. I've got a full line of these catalogues right in my store and I read 'em faithful.

"I know the prices and can figure out the freight rates, and when it comes to making a cash sale to a cash customer I can name a price that'll save postage and freight."

"But don't your customers ever get together and compare notes on the diversity of prices they are paying for the same article?"

"Not often; not often enough to worry over. A fellow who's paying high simply because he's poor pay isn't apt to gossip much about how he's stung. The bargain getters are the noisy folk."

This quaint, keen Mississippian is not offered as a dealer type. He appeared to be too much of a one-piece individual mechanism to be called a type. But his selling methods were somewhat typical of those in a large area of the South, where retail prices of farm implements are about as standard as the weight of razorback pigs.

To visualize the average implement dealer is a large order. We learn from careful investigators that the retail-implement trade is at its worst in the New England States and that it grows steadily better as one goes westward, until it appears at its best beyond the Mississippi.

The implement business has not thrived particularly in the New England area because there is little demand for the larger implements, and because the factories and transfer houses are so near at hand that goods can be quickly obtained. Hence, instead of an exclusive implement dealer with a good stock you are more apt to find a hardware or general-store merchant, or perhaps a blacksmith or farmer, carrying a few samples. More than sixty per cent of the farm-implement business in New England is said to be in the hands of men who have less than $300 invested.

A 1916 tabulation of Eastern dealers showed 4500 in the coast states, taking in New England and states as far south as the Carolinas. Only about 2000 of these were listed as "regular merchants," carrying stock in trade and conducting real mercantile business. As far back as 1908 Illinois alone listed more than 1600 sure-to-goodness dealers. As you cross the Potomac or get out into the agricultural backbone of America the farmer-agents begin to disappear. At least they thin out greatly in number.

The business is at its best beyond the line of jobbing centers—Minneapolis, Omaha, Kansas City, Dallas—and these favored areas in turn diminish as one leaves the great farming field and passes into mountainous and primitive conditions.

Retail trade reaches its maximum in those cities of the great West that are located on a trunk line far from any cross or parallel railroads. The distance from factory and transfer house necessitates the carrying of a large stock, and as there is little ready money among the farmers, extended credits must be granted.

A big business may be done, but the large stocks and long credits require much capital—sometimes as much as $100,000. The risks are heavy because of the little ready money obtainable, and a crop failure means the carrying over of nearly all accounts for an extra year. Repeated crop failures almost inevitably write BANKRUPT over the shop door.

An attempt to classify the implement dealer is more than likely to lead you into interminable ramifications. At a recent gathering of farm-implement manufacturers P. T. Rathbun presented three classifications that make a distinct appeal to the imagination. He visualized three grades of dealers, not by card-index letters or numbers, but as Sir James, Jim and Jimmy.

Sir James is the ideal of the trade, who has attained the knighthood of success. He has ample capital to conduct a thriving business. His business organization is almost of copy-book perfection. He carries a good stock, well housed and attractively displayed. He has adequate help, picked and trained for efficiency. His stock is intelligently priced and aggressively pushed. He gives credit where credit is due, but insistently and incessantly preaches the gospel of cash-purchase benefits. He takes advantage of cash discounts almost invariably and in giving credit does so only in return for bankable paper. He can figure his overhead and selling costs down to a margin of mills, and just a glance at his books from day to day will tell him where he stands.

He is so awfully good at the game, really, that he is almost too good to be true. But there are a good many

of him out in the Western territories, and one of the best signs of the times is that he is notably on the increase. Dealer associations and dealer organizations are doing much to increase his kind.

Coming down from Sir James to Jim is quite a descent, but it lands us among plain folks who make up the vast majority of humankind and always will. Jim is the average modern implement man.

Jim is typical of that great army of dealers who are ambitious to do a clean, honorable, profitable retail implement-and-vehicle business; who have homes they love to support; families they hope and plan to become honorable, educated and worthy citizens; communities where their all in material interests is invested, which they long to see aggressive communities, a worthy and satisfactory place in which to raise a family and call home.

"Jim," to quote Mr. Rathbun, "is not devoid of either capital or ability, though in common with most of the world perhaps is not burdened with either. He knows goods and knows men—at least, his customers. He combines more than you have the right to expect—the mechanic, the credit man, the banker, the buffer between maker and user of your wares.

"He has had enough of complaint to sour a less well-balanced nature, enough of disappointment and discouragement to dishearten a man of less character and strength; enough of imposition to make him distrust all mankind were he himself less worthy of the full confidence of both manufacturer and farmer; and, withal, enough of hard work to make him the man of strength he is.

"He has a stock of goods—perhaps too large, at least often too expensive; some display system—usually not beyond improvement; a general idea of what business costs are, and an ambition to find that elusive end we call 'profit.' He is aggressive, ambitious, trustful and trustworthy, as honest as any similar number of men on earth—is Jim the Implement Man."

This brings us down to poor Jimmy—Jimmy the Goat. Anyhow, Jimmy will tell you he's the goat. There's no easier way to explain away your shortcomings and misfortunes than by a shrug of the shoulders and a plaintive wail: "Oh, I'm the goat!" Pertinently, then, the Rathbun definition of Jimmy is interesting:

"Much, too much, of the happy-go-lucky, for-profit-trusting-to-Providence-and-accident sort. Too intimate with his trade to deny an extension of credit on past-due accounts; too busy to acquaint himself with costs and business methods. A disposer of goods, but never a profit gatherer."

This is short and pithy, but the trouble with most of us is that we never get a good near-hand view of Jimmy. We no sooner look him up and get his focus than Bang! he goes broke. And once he is down all the strong survivors take a wallop at him.

And if you looked round pretty close with an inspired regard you'd see that gaunt, ghoulish specter, the grim banshee of the trade, Long Credits, sitting on Jimmy's chest, taking Jimmy's word for it that he is the goat, and shearing him down to the subcutaneous tissue of his hide.

XIV

A Hoosier Who Woke Up

IF TWEEDLEDUM and Tweedledee had been implement dealers, they would undoubtedly have amused the populace. When Alice in her journey Through the Looking-Glass came upon Tweedledum and Tweedledee they staged a terrifying battle for her. The two chubby youths adorned themselves in quantities of hardware and then lambasted each other all over the lot. They didn't know what they were scrapping about, and the notion didn't reach into their gray matter to reason it out. They had just got into the habit of it, and while they made a great din the wounds inflicted were trifling.

A good many hundreds if not thousands of implement dealers are just as futile in their contests and rivalries as the mythical twins, Tweedledum and Tweedledee.

They don't bounce out into Main Street draped with washboilers and kettle covers and hammer one another with long-handled agateware spoons, but they do carry on idle and profitless price-cutting contests and spring-sale shindigs, and they likewise knock one another's lines and methods of doing business without ever being able to ascertain any benefits from the process.

And the farmer looks on and grins and takes every extra inch of long-time credit and price reduction he can get out of it.

The farmer also extracts all the free service he can derive from these bootless rivalries, which brings us to a mighty important factor in the modern merchandising of farm implements.

Let us turn to our business primers and find out what S-E-R-V-I-C-E spells. Why, it spells *service*, of course, and service is just service and nothing else. It means going out to the farmer's farm and setting up his plows and cultivators, his manure spreaders and corn shellers, his stationary engines and tractors, and so on. Likewise it means going out to the farm to screw up a loose nut, or to readjust a bad hitch. Furthermore, it means first aid to the injured implement, the duplication of parts that break.

But better than everything, you hear, it means something that the catalogue house cannot give, something that the coöperative buying clubs cannot and do not provide, something that the automobile dealer does not attempt to give—save in a very small way, and then you've got to come in town to get it.

The general understanding—or rather misunderstanding—of service is that it should be reckoned as a give-away product. The farmer pretty generally has this notion, and, having this notion, if he is a fairly shrewd sort of person, he is sure to reckon that if the dealer can afford to give it away it can't be worth very much in any event.

I met a dealer in Northern Indiana who screwed his face up like a dried persimmon when I mentioned

service to him. There was a smile embedded in the wrinkles, but it was a sort of puckered smile at that.

"Service," he said, "is a joke in most cases. Why? Because it's made so by the chumps who give it away. I was one of these chumps for a long time and that's why I know. I gave away hundreds of hours of my time and skill, just as Andy Carnegie gives away libraries. The difference between Carnegie and me was that he could afford it and I couldn't. Every time a farmer'd telephone to my store that some of his implements had gone askew I'd either lock up the place or leave it in charge of some fool clerk and then drive out to that farm and give away a whole afternoon of my time to put something right that the farmer himself could have put right with half an effort.

"I called this service and talked a lot about it when I made my sales. But I'll admit it wasn't a whole lot expert service and that when I went to work on most of the machines I tackled my hands were all messed up with thumbs that didn't belong and my idea of mechanics was pretty crude.

"This came to me all of a sudden one day when a manufacturer sent down one of his mechanical experts to show me how to set up a new implement. I pulled my watch on that fellow and saw that he did something in about sixteen minutes that would have taken me two hours. Then I asked him what he got by the hour.

"I got out some paper and did a little figuring after he left. First, I figured out what my time was worth to me as a merchant, and then I figured what my time was worth as an amateur mechanic. The conclusion I

reached was that I was a two-way chump. Even the inferior service I was giving to farmers was worth something, but it wasn't worth so much as my time ought to be worth as a merchant.

"The question then was how to balance this mess up. I puzzled awhile and then hit on it. I decided to cram all I could on mechanics till I could give service that was worth real money, and then charge for that service. I started right in to take things apart and put them together again. I visited some of the factories and saw how machines were made. I learned which were the weak and which were the strong parts, and pretty soon I got an education in parts that was worth real money to me.

"I couldn't afford to carry a very heavy stock of parts, but I worked out a schedule on the parcel-post shipment of parts that has helped me a lot. Some parts are too heavy to come through the post, but the great majority of parts can. Now, if a customer telephones me for a part I send a post card to the branch house or district warehouse and down comes that part to the farmer by parcel post. I have it sent direct to his R. F. D. letter box and that saves the trouble and time of shipping it out to him or having him come in for it.

"And nowadays I charge for my service every dollar it is worth. I have a service helper on my staff and I charge for his service every dollar it is worth. Was there a row about these service charges at first? You bet there was. When my customers began telephoning to me for first aid to their implements and I replied that I'd be glad to come out but it would cost them two dollars an hour for my time, I thought some of 'em

would bite off the phone connection. They called me a pirate and said they'd never buy so much as a half-inch bolt in my shop again. Some of them told me that if I didn't come out and give them free service they'd never pay me a dollar for the stuff I'd sold 'em on credit, and that I could come out and get it and sell it for junk.

"It wasn't long before I noticed that the men who made the greatest noise about it were the fellows whose credit was the most shaky, and this got me going over my accounts and planted the firm idea in my head to sell nothing from then on unless I got some paper to bind the obligation. These fellows could sign chattel mortgages for installment furniture, pianos, talking machines and what not, and if a dealer only went at it right they could give their notes for every purchase of farm implements, big or little, they made.

"It took nerve to swing all these changes, but I braced myself for the pull and went at it. I had to clean out a lot of junk I was carrying and cut down my stock pretty slim, and for a while I had a tight squeeze to tide things over. Some manufacturers threatened to take my lines away unless I kept up my orders, and one or two of them did. I wrote the others that I was going to get myself in line for the cash discounts they were recommending so loudly in their public speeches and that I had got my selling costs figured down to dollars and cents and knew a good deal more about my business than any of their salesmen could tell me.

"I also laid in a full line of mail-order catalogues and was able to quote the cash prices I was up against for almost the identical merchandise they were selling me.

"For a while things looked pretty dubious and I wasn't sure that I wouldn't have to hang out the red flag. A good bit of my long-time business was slipping away and going over to two other dealers. Both those fellows called me all kinds of a numskull and my own folks began to look at it that way too.

"And I don't know but I might have gone under if it hadn't been that a new line of engines was offered to me on a cash-sale basis at a price that was rock-bottom and below the mail-order price for the same product.

"I got a few of these engines going and then things began to pick up. I chucked the slate out the window and didn't make a sale that wasn't practically a cash sale. I took short-term notes that were discountable at the local bank. I didn't sell a thing that I didn't know the ins and outs of from the mechanical standpoint, and when I was asked for service I charged for it and got the money.

"I found this important thing out on the service end of it after I got the idea cemented down that any service I rendered had an actual cash value—nobody asked me to come out and fool away my time. My customers sent for me only in real emergencies. They tried their darnedest to render their own service or else they telephoned me and stated their difficulties. I narrowed my stock down to plows of one make and as few varieties of those as possible, to buggies of one make, one type and one price, to a well-known standard corn planter, and to the stationary engine that had proved its quality and worth from the jump.

"The first year I just about made living expenses, but last year I did $50,000 worth of business at a ten per cent net profit, and I'll come pretty near doubling that in another year without expanding my lines to any great extent. I plan to take on tractors, but not until I can get one that is especially adapted to this district, one that is made right and priced right and can be sold for spot cash or the equivalent of spot cash in short-term paper that can be discounted locally in the same way the automobile dealers discount their paper."

It may be contended that this canny Hoosier quoted above is not a dealer in the broad sense of the term; that he is merely a finicky sort of agent who evolved some pig-headed notion and by accident got away with it. Very likely it will be urged that he is peculiarly favored in being able to do business with the ideal sort of customers in an unusually prosperous agricultural district.

I will not attempt to debate these points. The interview is offered merely at its face value. Here was a man who tackled the experiment of both shortening his lines and shortening his credits and selling service. He accomplished unobtrusively what he did accomplish. I visited his store and saw his four specialty lines on display, each line carefully segregated by itself as a separate display unit.

Two farmers had come in to look at buggies. One of those farmers had made up his mind to buy a certain mail-order buggy and was on his way to the post office to purchase a money order. He had the mail-order blank carefully filled out and rolled up with the money.

On the way to the post office he had met the other farmer and they had dropped into a discussion of the merits of various buggies.

Farmer A, with the money order, had been buying various equipment by mail and boasted of the savings he had made. Farmer B agreed with him so far as some of the purchases were concerned, but when it came to the question of buggies, he suggested that they stop at George Henry's store on the way to the post office. He had bought a buggy for cash from George Henry and would swear by it.

So they dropped in, and George Henry was there. So were the buggies and so were various parts of the buggies that it pays to keep in stock. The buggies were in plain sight; so were the parts. George Henry —which, by the way, is not this Hoosier's name at all—greeted the two men and showed them the buggies. He had very little to say. He did not volunteer any buncombe on the subject of buggies. He was alert, waiting for questions. When asked for the price he didn't hem and haw and hew and cut and beat round the bush concerning terms and conditions. He stated the price in dollars and cents in a tone that was positive and final.

"But I can buy the same buggy for $3.50 less," objected Farmer A.

"I know that as well as you do," said George Henry; "but how about the freight? The freight on the XYZ buggy is $4.10. How about the time it will take you to come to town and get that buggy? It'll arrive knocked down. How about the time it'll take you to set it up? Isn't your time worth anything to you?"

"Oh, I can send Fred, the hired man, in if I'm busy."

"Sure you can," replied George Henry, "and use up a day of Fred's time and a day of a team's time. Maybe the labor of your hired man and team isn't worth real money?"

"Why ain't they worth money?" snapped back Farmer A. "I've got as good teams as any man in these parts and Fred's a right smart feller if you only keep after him."

"And this is your busy season too," said George Henry. "In that case Fred's time and the team's time are worth about twice as much as usual—say five dollars. Well, if you want to give five dollars' worth of their time and $4.10 in freight it looks to me as if you were going to pay a bit high for your XYZ buggy. Likewise if you break anything on the XYZ it'll take you some time to replace the part."

George Henry shut up and gave Farmer A time to ponder. He knew what was coming.

"If you'll knock off three dollars on that buggy I'll buy it, and here's the cash," broke out Farmer A. He produced and flashed the bills.

George Henry shook his head.

"Try that on the XYZ people and see if they'll cut the price," he said. "I named the cash price for my buggy."

"But if you knock off three dollars there'll still be a profit in it for you," pursued Farmer A.

"Yes," said George Henry, "but you'd have to use a magnifying glass to see it. The time I'm taking right now in talking to you is worth money to me. I'm

paying real money for the rent, light and heat of this store. The wages of my help are slicing off dollars as the hands of the clock go round. I've put in years investing time and labor learning to sell buggies, plows and other things—and that's worth money."

Farmer A pulled off his hat and scratched his head. Farmer B grinned and chuckled. "I guess he's got you there, Tom."

"Reckon he has," admitted Farmer A, who proceeded to tear up the mail-order blank and count the cash into the hands of George Henry. Half an hour later Farmer A was driving out to his place with his new buggy.

Now, this may sound like an incident manufactured to bolster up a theory. But it isn't. I was sitting back of the little railing round George Henry's office and heard every word of the colloquy. I didn't take it down in shorthand. There was no need to. It was one of those little human incidents that record themselves clearly and indelibly if one is interested. And I was.

XV

The Farmer's Elusive Cash

A GOOD many dealers I interviewed talk in this strain:

"Farmers running round loose with cash in their jeans are about as scarce as canaries in Alaska." To which we might reply that mail-order houses, automobile dealers and the multitude of concerns selling merchandise on installments collect from farmers every year between $600,000,000 and $700,000,000. Then there are the insurance companies that collect their millions regularly. And there is the banker who gets interest on loans and mortgages.

There really are ways and means of extracting cash from the farmer. Not from all farmers, to be sure. Unquestionably there will everlastingly be, this side of Utopia, a percentage of farmers to whom cash money will always remain an unknown symbol, who will remain submerged in a quagmire of debt all their lives.

Some bankers and money lenders will always charge these unfortunates usurious rates of interest on loans, some installment men will fleece them unmercifully, and some silver-tongued orators will perpetually hold them up as examples of the oppressive and grind-the-heel-in-the-face methods of the capitalist classes.

But a comparatively small percentage of the past-due paper that is still floating round in the implement world bears the signatures of the miserably submerged type of American farmer. Nor are the losses on this past-due paper very great in the aggregate. In the case of some big concerns it amounts to less than one per cent. The interest on this paper, however, runs into many millions more. The uncollectable bills of dealers who carry open accounts pile up more millions. and the farmer pays the greater share of this surtax. I have had it drummed at me that he willingly pays this surtax for the privilege of taking his time at paying for things that were sold to him.

It doesn't always follow that what is sold to farmers or any other class of purchasers is always bought by them. This may sound like an idiotic quibble; but pause a moment and listen to an automobile salesman who has abandoned a quick-selling line of buzz-wagons for small tractors and has made a killing at it:

"I'm not selling tractors to farmers. I'm letting farmers buy tractors from me—that's why I get cash for 'em. You've got to make a man want something pretty hard to induce him to buy; you can sell him anything if you are in the business of making terms that practically amount to a bribe. That's the trouble with the farm-implement people. The long-credit terms they make are so close to bribery that you've got to put on double-lens glasses to see the difference."

In the same connection there was an installment dealer I ran across in the one-crop cotton area of the Southwest. He sold house furnishings for a little something down and a little something every week.

As I talked to him in his shop I noticed an alleged painting in a gilt frame that was prominently displayed on a gilt easel. It was one of those ten-minute daubs that are turned out in gross lots by correspondence-school artists. It pretended to depict a knight in armor riding through the forest toward a setting sun. You didn't get this impression all at once. My first impression, at a little distance, was of a freight car of tomato cans which had blown up and caught fire. Both the knight and his horse were thoroughly tinned and soldered and the forest they traveled through had been burned over and tornado swept.

Harrowitz, the installment man, nodded to it and remarked: "Some work of art, eh?" Then he added: "It's a little gold mine."

I didn't quite connect. He asked me what I thought it was worth.

"A dollar thirty-nine for the frame," I ventured.

"I paid $1.82 for the whole outfit, including easel," said Harrowitz. "It wasn't quite new. I sell it for two dollars—twenty-five cents down and twenty-five cents a week."

"Where's the profit in that?" I asked.

Harrowitz rubbed his nose and winked first one eye and then the other.

"Listen," he said. "I've sold that art object two hundred times and it's good for fifty more before the gilt scales off. It never stayed out beyond five payments. Generally the collections don't run higher than a dollar. By the time the collector goes round for the fourth quarter the purchaser has sort of got cold feet on that picture. Most of my customers are simple

folk, not exactly fastidious in their tastes, though they do do a lot o' plowin' in patent leathers. By the time they've paid a dollar on that picture they figure they've got all the everlasting good out of it that can be got. The neighbors have all seen it and been stupefied by it. It seems foolish to pay any more money on it, so they let the collector collect it. Yes, sir, it's a little gold mine."

Now, notwithstanding all that work of art had gone through, and despite its low intrinsic value, when Mr. Harrowitz came to sell it for the two hundred and first time he took a chattel mortgage on it. No owner could possess it for his or her very own until he or she had made the eighth payment of twenty-five cents. Nor did any "purchaser" abuse it or neglect it, because of the fixed idea that it was not his to abuse.

How different it is with the long-time-payment purchases of farm implements that are left kicking round any old place it is convenient to leave them, until they are little better than disintegrated scrap by the time they are paid for.

XVI

The New Get-Together Epoch

CAN an optimist drive a camel through the eye of a needle? He can, with trifling ease. A sure-to-Henry optimist can drive a whole string of camels through a needle's eye and never turn a hair.

In the course of my roundabout tours of the Middle West seeking fresh data on the implement industry and its thriving little brother, the tractor industry, I met a considerable variety of sure-to-Henry optimists who proclaimed that they could do even better than drive flocks of camels through the narrow orifice in the stub end of a needle—to wit, they could drive tractors through in untold numbers and never so much as scratch the paint or dent the radiators.

The needle's eye in this little parable is none other than the gateway to cash sales and shorter credits. From time immemorial it has been both a close and a closed way. The big, many-humped camels in the implement industry have lumbered up to it, and have stopped. They have cocked their eyes at it and have looked through it. What they could glimpse on the other side was like unto the Eden of their dreams.

There were to be seen golden streets and shining buildings. There were hustling folk with radiant,

happy countenances going their several ways with speed and precision. Everywhere there was order, system and calm routine. There were no red banners of bankruptcy to stain the halcyon aspect, nor could the hoarse braying of the auctioneer be heard above the hum of the many harmonized industries.

Multitudes of prosperous-looking farmers thronged the paved ways and the unpaved byways, each one bearing a wallet stuffed with cash. There was no jostling or stampeding in this glad throng. Every man knew whither he was bound and the easiest route thereto. There were no bands or crossroads sideshows to distract attention, no hungry price-cutters reaching out for the farmers' coat tails to pull them into their spring sales and bargain exhibitions. And lo! there were no automobiles!

Is it any wonder that the camels wept and moaned with bitter anguish when they saw all this and yet felt the utter futility of attempting to negotiate the eye of the needle? As they sat and wept they saw little sawed-off camels, knock-kneed dromedaries and sorry critters resembling goats and gnus rush up to the needle's eye and launch themselves blindly at the aperture, only to fall back bruised and battered and shorn of their mangy hair. Finally, when they had wept their tear ducts dry, they lumbered to their feet, wheeled about and went back to the sour-grass pastures where the long-credit thistles and the past-due papyrus robbed what succulent fodder there was of both flavor and nourishment.

During the latter months of 1915 and carrying over into 1916, far more has been done toward realizing the

dream revealed through the needle's eye than at any other period in the history of the implement industry. Last fall the leading implement manufacturers appointed a committee to discuss the great drive they would make toward shorter terms if they could only get together on some common understanding. Price fixing and monopoly agreements were forbidden to them, but if they could obtain from one another dependable assurances that they would revise their sales methods to conform to a general scheme of shorter credit terms, a great forward step would be made.

I talked with the members of this committee after they had held several meetings. A few of them, who are eminent in the industry, were optimistic. They were ready to predict this much—that there would be no carry-over of credits from 1916 to 1917 by the manufacturers represented on the committee. Assurances had been given by the Big Five, and the Big Five dominated the industry so far as volume of production and sales was concerned.

Looked at from an economic standpoint, such an agreement would be a huge gain to the industry. It would be a great gain not only for the big fellows but for the little fellows as well. Certain dealers would kick and balk and plunge about, but no real opposition need be looked for from the efficient dealers. The inefficient dealers would be the chief kickers, and the new arrangement would tend to eliminate them from the general scheme of things. The efficient dealers would gain by the elimination of the inefficient dealers. The squeezing-out process would continue under a steadily increasing pressure. And with the small gas

tractor coming in as a great big factor in the industry the inefficient dealer should be discarded as rapidly as possible.

In the past the inefficient dealer has possessed a definite utility for the marketing of small implements. Without him, seemingly, it would have been impossible to expand into new territory, but when it comes to selling tractors and the improved appliances that will be sold as tractor accessories, only the efficient dealer may serve. At least that's the way it sized up as the selling plans were devised.

The best of selling plans do not always bear the intended fruit, however. The marketing of any commodity must have its processes of evolution. The same may be said in regard to the projected drive in the direction of shortening credits.

Simply because a little group of gentlemen representing investments of half a billion dollars got together and decided that there were millions of profits to be gained by walloping the long-term-credits specter out of existence does not mean that said specter is ready for his shroud and deep interment. There may be a slip-up—indeed, there may be a series of slip-ups.

Not all the members of this very important committee may feel the same way about it after they retire to the seclusion of their own manufacturing plants. When they call in their sales managers, those able and canny gentlemen may point out that there are certain almost insurmountable obstacles in the way. For instance some sales manager may rise up on his hind legs and remark:

"It's all mighty fine for the U-9 Plow Company to dictate iron-clad terms to its dealers and cut out all 1917 carry-overs. The U-9 company has had horseshoes hung all over it for the last year and its stock is pretty well cleaned down to the bone. None of its lines needs very hard pushing. Its inventory is as clean as a whistle.

"We've had no such luck. Some of our warehouses are chockablock with both our own lines and some of our jobbed lines. A lot of that stuff is getting out of date, and if we're going to unload it at all we've got to let it down on the dealer as easily as possible, both as to price and as to terms. It's a cinch the farmers are not going to stampede for the stuff. It's got to be sold to them, and you and I know how the farmer is accustomed to *buy* implements for which he has no passionate desire."

By the time the sales manager has presented the case in all its manifold details, the big boss may at least partly have emerged from his rosy dream. He may soon be in a frame of mind that suggests temporizing. He may be ingenious enough to devise a way to clean out his unsold overstock without resorting to the old-time carry-over contracts with the dealer. He may have nerve enough to take an apparent considerable loss, though only a temporary one, for the sake of infinitely greater gains in the future. He will have to thresh all this out with his board of directors and his staff of superintendents and managers.

The head of one big company told me that he hoped and prayed that the manufacturers would hang together and put their plan through in a big, broad way.

"But," he said, "I am afraid of the Blank & Dash Company. They are bigger than we are and they are our deadliest rivals. It has long been their policy to annihilate competition where it was weak enough to be cut down. If they set out to shorten up terms it is going to mean a longer lease of life to the little fellows. Volume of production is their greatest bulwark and they cannot maintain volume if they stiffen up their selling terms. They will be compelled to surrender certain avenues of distribution to the little fellows. Of course, the little fellows who keep tied up to the long-credit fallacies are going to strangle themselves in the end, but this year there are several agencies that might be utilized to hasten the slaughter.

"The price of raw materials has increased anywhere from twenty to sixty per cent. All metal products used in the manufacture of farm implements have gone up and are still going up, and the manufacturers of these products do not extend long credits. The little fellow who buys in small quantities will pay proportionately more than the big fellow who buys in large quantities. A similar condition will apply in the labor market.

"This will mean an increased demand for cash upon the small manufacturer. If he can shorten his terms to the dealer appreciably, he will be able to obtain the cash to tide him over. If he is forced to do business in competition with the big fellow along the old long-credit line, he will not get the cash in time to satisfy his creditors.

"Looked at from this angle it would seem to be the psychological time for the leaders in the industry to turn the elimination screws down to the limit.

"But there is still another complexity to face. The increased cost of raw materials will compel the manufacturers to raise the price of farm implements. If we continue to do business under the old arrangement we shall have to boost prices fifteen per cent. If we can shorten terms so as to avoid 1917 carry-overs the increase need not be beyond ten per cent. Last year was a mighty prosperous one for agriculture, and in my opinion a raise of ten per cent would not have a disastrous effect in cutting down volume of sales. A raise of fifteen per cent would decrease the volume of sales to a serious extent.

"So you see there is a really big urge behind the logical policy of shortening credits from the manufacturer's standpoint, and the golden plan would be adopted unanimously if we could only trust one another more than we do.

"There is still another phase that cannot be left out of the reckoning. There are certain of the Big Five or Big Six—and some of the smaller twenty-three, for that matter—who have been expanding their foreign business enormously in the past five years. There was a big slough-off in this business immediately after the start of the European war, but by the middle of 1915 the pendulum swung back.

"Splendid gains were made in the South American trade. Foreign orders for tractors poured in. Here was and still is an outlet for volume, and the concerns that have skimmed off the cream of this export business would be in a position to raise their domestic prices fifteen per cent and get away with it on the old long-credit basis.

"Naturally it occurs to some of us that those of our rivals who are cutting up export melons may fall from grace when it comes to the actual fulfillment of promises made in get-together meetings. There are doubters in our midst, an important group, whose original habitat was Missouri.

"We recall many winter meetings of the plow association in Chicago when we gave grips all round and exchanged golden-rule promises to clean up our selling methods and get down to better economic principles in expanding our trade. We recall quite vividly how some of us who relied upon these promises and agreements and hewed to the line of closer selling and shorter credits were stung, and how the industry suffered still another setback.

"Those we had relied upon as the shining lights to lead the new movement were the first to stab us from behind. We had hardly begun to stiffen up our contract terms with our dealers when down they swooped into our choicest territory and attempted to gobble our trade on almost any terms the dealer would ask. It was traditional cutthroat competition and the only way we could meet it was to backslide into our old methods."

XVII

How the Bankers May Help

IT IS palpable that optimism is not likely to become epidemic in the farm-implement field. The pessimist insists upon being heard from, and it is never wise to overlook what he has to say. Some pessimists are simply croakers, but now and then you bump into one who is a keen analyst. Yet I doubt if there are any of the latter sort who will gainsay today that great progress has been made toward bettering conditions in the implement industry. I have pretty thoroughly scoured the farm-implement field in the Middle Western centers that include approximately eighty per cent of the industry, and everywhere I found the credit situation under discussion. And this discussion was not confined to merely academic channels of theory.

The credit problem demanded immediate attention and concerted action. The long-credit spectre was seen face to face as a devouring incubus. The development of the automobile industry had thrown the spotlight upon it. The beginning of the new tractor industry was an impelling factor that roused the most hidebound reactionaries from their lethargy. The new tractor industry will be discussed by itself; it is only necessary to point out here that the problems involved

in the early growth of the tractor industry are closely interwoven with the problems of the farm-implement industry.

The implement men were suddenly brought face to face with the possibility of losing the tractor, and the immense possibilities of profit contained in its development as a necessary factor in farm equipment. The antiquated sales methods of the implement industry had been tried out in the late lamented big-tractor boom and had failed dismally. If the same antiquated sales methods were hooked up with the new tractor boom they would likewise fail, no matter how much better the tractor is today than it was ten years ago.

Mere mechanics without capital or backing had jumped into the automobile industry and had taken it unto themselves while the captains of the implement industry were marking time and thinking about it, and some of these mere mechanics gobbled up tens of millions of cash from the same farmers whose past-due paper was held by the captains of the implement industry.

The implement men might have played a big part in the automobile industry if they had had the vision and nerve to tackle it on the only sane economic basis to conform with twentieth-century conditions. They failed to get even the slimmest sort of pickings, for the very good reason that they failed to go after them. They couldn't see the farmer as a likely purchaser of motor cars for at least a generation, and when he did begin to buy in vast quantities within a decade they were knocked galley-west. Indeed, they were

astounded two ways: First, to see the farmer come into the market at all; second, to observe him unfurl a roll of certified currency and hand it over to the automobile manufacturer.

The type of country banker has improved amazingly in the past two decades and will continue to improve much more rapidly, thanks to the new banking laws and the organization of the Federal Reserve banks. And for still further future expansion we will have the new Federal land banks that Congress has at last seen fit to grant to the long-suffering farmer.

Formerly implement purveyors assumed the functions of bankers for the farmer when the only way a farmer could obtain money from a bank was to mortgage all his earthly possessions and his everlasting soul. In that earlier epoch our agriculture was passing through many throes of pioneering and bonanza enterprising. Financing the farmer in many instances was something like stacking chips on a roulette table—at least, that's about the way it looked to the bankers. The idea that every farm was a factory occurred to few if any of the banking fraternity. Farm machinery sold to the farmer was like any other commodity he purchased, whether on time or for cash. They would just as soon lend a farmer money to buy a three-story cuckoo clock as they would lend him actual cash to buy a reaper or a binder.

What a vast change has occurred! The country banker was persuaded to loan money to the farmer to buy automobiles. He is now lending money to the farmer for the purchase of tractors—lending this money on notes of hand and without the added security of chattel or land mortgages.

Early in January, 1916, the Federal Reserve Board ruled that a farmer's paper given as security for money borrowed to purchase farm machinery could be rediscounted at Federal Reserve banks at low interest.

Shortly after its organization the Federal Reserve Board made a ruling in favor of agricultural paper for rediscounting, extending the time from ninety days to six months. The banker could take a farmer's note given to secure an advance for the purchase of livestock, seed, fertilizer, and so on, and rediscount it for six months at the Federal Reserve bank, of which it—the country bank—was a member. Farm machinery was not included in the list of farm equipment covered by this rediscount privilege, or you might say farm-implement paper was denied the privilege of agricultural paper. A Cleveland bank asked that the privilege be extended to cover farm implements and the Federal Reserve Board made a ruling complying with the request.

Now the country banker may take the farmer's note given to the dealer for the purchase of farm machinery and pass it along to the Federal Reserve bank for rediscount. And when the note falls due at the expiration of six months the country banker may accept a renewal note and rediscount that.

The president of one of the great implement concerns told me that this rediscounting privilege was going to give a big lift to the implement manufacturers who were determined to shorten up their credits with the dealer. It is a real step forward in the direction of rural credits, and while it may not solve the problems of hundreds of thousands of farmers who

deserve infinitely more financial aid than they are able to obtain save at ruinous rates of interest, it will certainly pave the way for further progress.

Altogether, the outlook for shorter credits is far from gloomy. The farmer has been getting a liberal education in the advantages of buying for cash or on his note which may be liquidated as the equivalent of cash; dealer efficiency is greatly on the increase, thanks to the progressive educational efforts of dealer associations and dealer organizations throughout the country.

The dealer standard today is many points higher than was the standard ten years ago. Both manufacturers and dealers can continue to raise this standard. There is a definite obligation upon the manufacturer to abandon his old methods of appointing haphazard agents whose entrance into the retail field can mean nothing more than the multiplication of inefficiency, and there is just as definite an obligation upon the dealer to abandon the tinhorn practices of price cutting, slipshod bookkeeping, and taking on more lines than he can ever hope to sell.

The manufacturer is infinitely more to blame today for what the dealer is not than the dealer himself is. The reform must begin at the top and work downward. The dealer will meet it as nearly halfway as he can crawl under the economic burdens he is carrying.

As for the farmer, he has been too much on the outside. I was about to write "on the outside, looking in," but as a matter of fact he has not been looking in; rather, he has been on the outside with his back turned. He hasn't bothered his head much about it at all. He

hasn't asked to have it figured out for him, because of his inherent suspicion of figures. He has either regarded himself as the victim of a commercial conspiracy or has refused to think about it at all. He has seen dealers come and go in hosts and has come to regard the majority of them as crooks or fools. He has seen inefficient dealers go down in little armies.

But what he hasn't seen or heard of has been the failure of thousands of manufacturers who were just as inefficient, short-sighted or just plain unfortunate as the dealers who hung out the red flags.

The farmer, however, is coming out of his trance and is beginning to learn something of the intricacies and complexities of great industries. He is becoming more and more of a business man himself, both in his producing and in his selling methods. Wherefore he in his turn will be able to meet the dealer halfway, after the dealer has met the manufacturer halfway, on the basis that should ultimately lay the bogy of long credits so far underground that nothing short of a cataclysm can ever shake him loose again.

Part Two
The Tractor

A Mighty Industry in the Making

THE farm tractor has its second wind. It has found itself after years of groping. Back of it there is a mighty industry in the making. American farms—the farms of the world, for that matter—are ready to receive the tractor. The American farmer is almost too eager to add gas power to the mechanical equipment of the farm. Improvement and cheapening of the product have put it within his economic reach. In many cases he is going to strain his reach to get it, just as he has been straining his reach for other mechanical equipment that his farm-management plans had not made room for.

The small, low-priced tractor possesses the attractiveness of a bauble to multitudes of farmers, and a great many farmers are going to buy gaudy playthings, and not power machines, unless they skin their eyes and approach the counters of the tractor purveyors with exceeding wariness.

We might as well start off this series with a warning and hang up a few SAFETY FIRST and WATCH YOUR STEP signboards. If the farmer will follow me he may save himself much hard-earned increment. Not that there is any immediate need for muck-raking or destructive criticism, but the small tractor, and the little

bit larger than small tractor, and the still larger than the little bit larger than small tractor, are coming out of the shops so fast and in so many shapes and patterns that the ordinary looker-on is more than likely to become giddy watching them.

The manufacturer of the tried and proved product deserves the benefit of all that can be said in his favor. He has a variety of brand-new special problems on his hands that the buying public on the farms should consider with him to their own advantage.

Many of these problems splice in with the problems of the farm-implement industry. Some phases of the gas-tractor industry may revolutionize the implement industry; other phases may strip a gear or two in the machinery of the farm-implement business.

But before we come to these problems in their separate aspects, let us rivet our attention upon the fact that the gasoline tractor is coming with such speed that there are bubbles in its wake. Not harmless soapsuds bubbles, but bubbles that are likely to cause grief and anguish to those who mistake them for what they pretend to be but are not—bubbles that will burst and rend the bankroll and destroy the fabric thereof.

Was it not so in the rampant beginnings of the automobile industry? In the initial development of the horseless vehicle it was commonly called the automobubble.

No wonder, when soap-makers and tinsmiths went into the game on the theory that anything that bore the flimsiest resemblance to an automobile could be sold to the unsuspecting public. But no more do you hear of the automobubble—the in-

dustry has stabilized itself, and has left its long wake of bursting bubbles far behind.

In the tractor game there will be a repetition of what happened in the automobile industry. Possibly not to the same magnificent extent, but to a very considerable extent, the stable manufacturers and the easy-going-take-the-other-fellow's-word-for-it buying public are going to suffer from the contrivance and disintegration of gas-tractor bubbles.

The stable manufacturers will merely compete with the bubble products. The farmer will buy the bubbles and will be everlastingly stung. Having been stung, he will of course vent his wrath upon tractors in general. He will denounce any and all tractors as delusions and snares. The makers of good tractors will suffer indirectly from this. If the victims of bubble products could make a loud enough noise to be heard far and wide in the great tractor market, the makers of honest products would be compelled to shoulder a crushing burden.

But the bubble victims can only twitter. Their plaints and lamentations will be confined to narrow localities. And the little groups of neighbors who hear the tales of woe will forget them overnight. When Bill Opdyke tells Lew Budd how he, Bill, bought a tractor that couldn't pull a one-bottom plow through a custard pie, Lew Budd will publicly sympathize with Bill and agree with him that the man who sold him that tractor ought to be grilled over a slow fire till he perished in excruciating agony. But when Lew Budd sits down to think it over he'll gradually figure out that Bill Opdyke is a natural-born chump anyhow and

deserved to be stung. Says Lew to himself: "If poor Bill only had my gumption and common sense he'd never been stung. Then maybe half the trouble with that tractor is the way Bill runs it. Now, in my case I'd buy a good tractor to start with and I'd run it with better than average intelligence."

And the upshot is that Bill Stung Opdyke's holler doesn't make a dent anywhere. The bubble rogues keep right on selling flimsy up to the point where the makers of honest products are able to advertise them out of existence.

So, Mister Farmer-on-the-Trail-of-a-Tractor, beware the bubbles! Lots of them are shiny and iridescent and comely to look at, but there is no substance back of them at the manufacturing end. Their parents are very likely to deny them; there are no service aids attached to them, for primarily they are made merely to sell—not with the special object of standing up and doing the work.

To sail into this tractor game with a discussion of bubbles may seem like beginning at the wrong end with destructive commentaries. Let me explain: I have two objects in view. First, I desire to draw the attention of the farmer at the very beginning to the fact that he should choose the tractor to meet his needs with the utmost discretion; second, I wish to begin with the earliest beginnings of the tractor industry and follow it step by step through a period of gigantic bubbles and rainbow booms until the industry emerged and found itself and got going on a sane basis of engineering efficiency and cash sales.

In my introductory chapter discussing the trend of

the farm-implement industry I made bare mention of the fact that the big-tractor boom had collapsed. Now I am going to set down in some detail why it collapsed. I have gone over the situation carefully with a dozen or more men who were concerned in the boom. They agreed to a man that they started wrong. They built the wrong thing and they sold it in the wrong way. Their vision of the market for their hurry-up product was warped and twisted. As they look back upon what they did, they admit that they were a giddy lot of theorists; also, a good many of them were plungers of the sort who leap into deep waters before they learn to swim.

The Northwest had been opened up and the big wheat gamble was in full swing. Prairie breaking in the Middle West had begun with man power plus horse power. There had been a big wheat gamble in the central prairies and a multitude grew rich at it. But when the Northwest was pioneered there were climatic differences, also geographical and physiographical differences. Pioneering had been the stiffest sort of game in the Middle West, but in the Northwest Nature raised the ante still higher. It was a bleaker wilderness, with greater transportation difficulties, and it was infinitely less attractive to labor.

The primary problem in the Northwest, then, was to obtain man labor, the secondary problem was to get horse labor. The farmers could get the horses to pull the plows, but they couldn't get the men to drive the horses. It was altogether a big-plowing problem.

First, they tried out the steam tractor, which had been developed with the development of the threshing

machine. The steam tractor was never intended for plowing. It devoured fuel like a blast furnace and possessed an unquenchable thirst. It was all to the merry if you anchored it alongside of a well and a trainload of fuel, but when you tooled it out into the unwatered wastes you had to organize a reserve army to keep it fed up.

The gas engine was a growing infant in those days, and the idea occurred to a small host of inventors to force its growth to fit the urgent needs of the Northwest. To do this it was necessary to jump it from infancy into robust manhood—you might say gianthood. The inventors began to design ten and twelve plow gas tractors. It was almost as if Robert Fulton had started out with a Mauretania.

II

The Big Tractor Boom Collapse, and Why

A MANUFACTURER who built many of the leviathan type of tractors to order gave me this interesting account of the early days of the big gas tractor:

"Designers and promoters and all sorts of people flooded us with orders to build tractors for them. They wanted big ones—the biggest possible. The bigger they were the more money they could get for them, and it was just as hard and just as costly to sell a fairly big one as to sell a monster. We followed their designs as best we could and turned them over.

"The engines had power, provided you got them to go—that is, started them. Starting devices for gas engines in those days were mighty crude, and the bigger the engine the tougher the job to start them. For most of these big tractors it was a job for the shop mechanic to start them. In many cases it took an entire staff of shop mechanics to start them. Occasionally big tractors were sold and shipped out to farmers when the manufacturer's machinists couldn't start them.

"The weight of those early big tractors ranged from 26,000 to 50,000 pounds. Think of that load for a crude, raw, undeveloped, half-baked engine to pull,

plus a gang of ten to fourteen plows! Yet sales ran into the thousands, until the Dakotas and the Western Canadian provinces were stocked up with fleets and squadrons of them.

"They were sold to effect great economies of man labor, but it soon developed that it required the services of an entire community to start one. Hundreds of farmers kept them going all night so as to be sure they would start in the morning. Boys were assigned to keep them supplied with fuel and to see that they didn't stop during the night. When they stopped they often stopped for days or weeks. Occasionally they stopped like grandfather's clock—never to go again.

"Parts broke, parts wore out and parts crystallized. The manufacturers had not provided against this wear and tear by making enough duplicate parts. New castings had to be made to order and this ran repair bills for the farmers up to the sky. Repair bills on a single tractor would range from $500 to $1500 in a season.

"Farmers went broke, manufacturers went broke and distributors went broke. The farmers were paying two, three and four times the cost to manufacture these tractors. A farmer agent would collect a $1200 commission on a $4000 tractor, provided the tractor was ever paid for. Then there were the manufacturer's and the distributor's profits to deduct.

"The big tractors were usually sold for twenty-five per cent cash down and the remainder in two or three fall payments. The purchase price had to be set as high as the traffic would bear to carry the great risks. The whole scheme of things was bad. The tractor was

sold on a bad economic basis before it had arrived within hailing distance of mechanical efficiency.

"Yet the drive was kept up at high pressure during several good crop years. Prosperity kept the bubble puffed up and dripping rainbows. When the bad crop years came along the bubble burst. It became common talk in the Northwest that every farmer who had plunged on a tractor had gone broke.

"Bankers refused to give credit to farmers who owned tractors; merchants followed suit. The scare carried even further. Jobbers and wholesalers were instructed to give no credit to merchants who gave credit to farmers who owned tractors.

"It looked for some few years as if the big gas tractor had received a wallop it could never recover from. Northwest distributing centers began to acquire tractor graveyards. I have seen as many as 500 of these leviathan tractors parked in one of these graveyards."

During this dismal period, however, the traction engine was beginning to find itself. The stationary gas engine had found itself and the automobile had run away from all competitors in the field of mechanical invention and manufacturing and selling efficiency.

Also agriculture had undergone great changes. The big wheat gamble had slowed up and land values were skyrocketing. Great ranches were being divided and subdivided. The market for the mammoth tractor grew narrower while you watched, but at the same time the market for the small tractor opened up clear across the continent—split wide open, you might say, and invited the tractor makers to come in with a rush.

In lining up for the purposes of comparison the big-tractor boom and its bubble days with the small-tractor boom and its bubble days I do not wish the impression to gain that the big tractor is a failure simply because it started wrong.

The big tractor has evolved through many refining processes and has become an increasingly important factor in the development of both agriculture and commerce. It performs definite functions that the small tractor is not likely ever to assume. In big farming operations, where there are large tracts of land to break, in road work and big traction enterprises it has made as secure a place for itself as has the motor truck in the range of usefulness of the motor vehicle. It has become an engine of war of essential and primary usefulness.

Nevertheless, the prospect is that the big gas tractor will soon be regarded as merely a valuable by-product of the tractor industry. Tractor manufacturers who have been making a few score big tractors a year to meet a steady, dependable demand are planning to manufacture small tractors by the thousand.

A considerable group of tractor makers have rushed into this small-tractor market blindly, just as the majority of tractor makers rushed into the big-tractor market blindly. The Bubble Brotherhood rushed up to the starting barrier at the first sound of the bell, panting with enthusiasm and ready to take all the hurdles and ditches with their eyes closed. A good many of them are up to their neck in the ditches now, but some of them are still running in long, loose leaps and with their eyes still closed.

As a matter of canny fact, however, the Bubble Brotherhood cannot get very far in the tractor game—not nearly so far as they got in the automobile game. The automobile had an easy time of it making good on an efficiency basis compared with the task that confronts the small tractor.

The automobile could make good by putting on its Sunday clothes and strolling up the avenue. So long as it looked good, kept going and got there, not a great deal more was required of it. But the tractor has to get itself into overalls, roll up its sleeves, go to work and earn its way. It must perform hard labor.

A few farmers may buy the Lovely Lily tractor because of its gorgeous paint and the sweet symphonies of its carburetor, but the vast majority of farmers are going to buy the Gitupangit tractor because it develops the required horse power to pull a definite number of plows through a soil type of many variations of texture without panting or getting the heaves. And the great farming brotherhood will not be slow to learn that the Gitupangit tractor that should strike their fancy most is the critter with five or six horse power to spare over and above the definite amount of horse power required to go through with a pretty demonstration.

The automobile and gas engine have taught several million farmers at least an elementary lesson in power mechanics. This may prove an important factor in impeding the sale of the Lovely Lily or the Rainbow Gem. But there are still greater barriers in the way to prevent the Bubble Brotherhood from getting very far —selling costs and selling organization. Yet another

mighty impediment in their way might be labeled PRODUCTION ECONOMIES. Only volume of production will permit the sale of efficient tractors at a low or popular price.

Scouting round through the Middle West and in the Minnesota and Wisconsin territory, where the tractor industry centers, I gathered much illuminating material concerning the bubble tractor. I did this scouting in the beginning weeks of the current year, 1916, which promises to be a golden year for the tractor industry. I visited a dozen plants where bubble tractors are being made or have been made, or where tractor parts are being made and sold to members of the Bubble Brotherhood.

In many cases only a few demonstration machines are being turned out. These are built solely for demonstration purposes, not for sale. The gentlemen who designed them and had them made are merely wildcat promoters. Their purpose is to sell stock, not tractors. They will endeavor to sell stock to farmers—not that they will turn down the widows and orphans of the cities, school-teachers, lone spinsters, or other humble folk who are likely to be gulled by get-rich-quick lures.

More than a hundred concerns have come into the small-tractor arena within the past two years and have taken out patents on tractors. One big manufacturer showed me a list of 152 concerns that announce their willingness to sell tractors. The Department of Agriculture at Washington has compiled a list of 178 different designs of farm power tractors that were either on the market or hoped to get on the market before the spring of 1916. These lists had been brought up

to date so far as it was possible to obtain the information up to May 1, 1916.

Some big automobile manufacturers are coming into the game, but not with a rush nor with untried products. The engineers they assigned to the job of scouting have recommended caution—extreme caution. They have also recommended that all the benefit possible be obtained from the mistakes of others. They advise delay until all tractor designs become more nearly standardized, and when a great volume of production may be marketed by means of modern advertising and selling methods.

Few automobile manufacturers have any expectation of invading the tractor field and shouldering the specialists to one side at one jump. They see that the big farm-implement manufacturers have great advantages over any other special class of competitors, provided they wake up and adopt modern business methods in both manufacturing and merchandising. They see also that the implement men have ready-made sales organizations that should have every possible advantage in selling tractors to farmers.

But will the implement men modernize their methods as they come to sell tractors in a big way? There are a few encouraging signs, but almost as many discouraging symptoms.

During the past six months they have proclaimed their intention to shorten credits and approach more and more nearly to a cash basis of doing business. Eminently a favorable sign.

Since the beginning of the year I have talked to the heads of concerns that have hundreds of millions

invested in the implement industry. Some of them have been making tractors for years. Others have taken on tractors within the past few months. Still others are planning to take on tractors. They declared unanimously that they would sell these tractors for cash—sell them for cash through the same dealers who have been disposing of their tillage and harvesting machinery on long time. The majority of them declared they would shorten up terms on all lines at the same time they sold their tractors for cash.

It should be manifest that there are cumulative forces to urge the implement men to abolish so far as possible long credits. The great and almost overwhelming demand for small tractors—a cash demand, mind you—is blazing the way as nothing else could.

III

A Modern Miracle in Selling for Cash

HAS the farmer been asked whether it is his anxious wish to pay cash for tractors? He has not.

Will he be asked this pertinent question? He will not.

Will he be asked if he can afford a tractor? This is an impertinent question. Better not rile him.

Will the farmer be asked if he has the cash? Again, no.

Will he be asked if he can dig up the cash? Better not ask him that either. The farmer is sensitive. Take it for granted that somewhere in his strong box he has a credit wand that will summon the cash out of the atmosphere. Then stand pat.

The ideal situation for marketing tractors is contained in the following little colloquy:

FARMER: I want a tractor.

DEALER: Good, the Slippery Comet 6–14 is just your meat. Fork over the cash.

FARMER: Roll the Comet up to the bank. I'll meet you there with the shining coin.

Sounds almost like the way things happen in fairy stories or in the Rollo books. It may shock some implement manufacturers and dealers to learn that it has

actually happened within the past year in the new-bloom development of the tractor industry. It is to be hoped that this will be a pleasant shock, an agreeable surprise. Not that the same thing is bound to happen to them. It is too early to predict universal cash sales for the tractor. Certain implement manufacturers have a dizzy lot of readjusting to do before they can even trail in the get-the-cash-for-the-tractor scramble that has begun.

The story I am going to tell does not involve an implement manufacturer, nor yet an old-line tractor manufacturer. It is a concern that sprang up suddenly while nobody was looking. It grew into being for the one and only purpose of selling tractors. It had good, strong backing, but not reservoirs of funds.

Its organizers had been in and out of various tractor concerns that had gone over the bumps during the unhealthy big-tractor boom. No, there were no lambs in this little flock. They were men who had made mistakes wholesale in making and selling other tractors. They had sold too great a tonnage of metal for too great a tonnage of purchase price and they had failed to get the cash. So when they got together in the tractor metropolis of Minneapolis they decided greatly to reduce the tonnage of metal, also to shave down the tonnage of cash, but *above all things to get the cash.*

Let us call this little enterprise the Cold Dough Tractor Company. Of all the tractor concerns I have looked into, the Cold Dough people have had the most thrilling career; furthermore, they have sold their product only for *cash* and are still selling it for *cash* only. Not that they have had straight sailing and

smooth rolling from the start. They will tell you very frankly today that they began operations with the right selling idea but the wrong tractor.

Their first model, the Little Dough, was not a success. The price was attractive enough—less than $400—but the tractor itself lacked pep. It was sold as a two-plow tractor, and under favorable soil conditions and in the hands of a skilled operator it could pull two plows, and after the plowing it could pull harrows and drills and seeders and rollers.

But what it greatly lacked was reserve power. When the plows cut into stiff sod or gummy gumbo, or struck obstructing stones and impeding trash, and so on, the motor would utter a plaintive sob and lay down on the job.

No, it must be admitted for the sake of truth that the Little Dough had not had the thorough and careful testing out that any tractor intended for all-round farm service should have. It was too much of a rush product, and many hundreds of purchasers were entirely justified in yowling that they'd been stung.

Although the Little Dough was shy a good many things that even a pony-sized tractor should be long on, the company managed to market 3800 of them for cash and survive the stigma of having started wrong. The Little Dough was launched into the 1914 tractor market. It began its career of distribution for cash in April of that year, and continued to sell for cash even after the war had started to muss up the financial centers of the globe and bring on a period of panicky retrenchment in America.

Looking back over the situation it seems almost a miracle that the Cold Dough tractor makers did not founder. What saved them was their selling policy and their alertness in recognizing that the Little Dough did not fill the bill. They will not admit that it was a total failure, and persist in arguing that it was a good buy for the money. To my way of thinking this is a specious argument. Nothing is a good buy for the money that fails to render the service for which it was purchased.

The makers of the Little Dough contend that there was nothing faulty in the design, but that there was not enough weight, stability and power in it for all-round rough-and-ready service. So what they really did was to enlarge the Little Dough into the Big Dough. This meant an increased cost of manufacture of about thirty-five per cent and, naturally, necessitated a raise in the retail price. The price was jumped from less than $400 for the Little Dough to almost $600 for the 1915 Big Dough. The 1916 price for the Big Dough was jacked up about ten per cent above the 1915 price.

There were enough Little Doughs scattered round in twenty or thirty states to give the company a black eye. Here was a difficult situation to face. Competitors stood on the side lines and grinned. It had been widely predicted that the Cold Dough Tractor Company would shrivel up and blow away. How could it survive the ignominy of having produced and marketed a lemon?

Well, the makers went about it in this way: They announced in a loud, resounding voice the creation of

the Big Dough. They advertised the Big Dough as *It*. They didn't refer back to the Little Dough as a failure, save by the gentle implication that it was about the best that could have been expected for the money. But their agents and distributors went among purchasers of the Little Dough and offered them a bargain exchange by allowing one hundred per cent on the purchase price of the Little Dough.

Not all of the Little Doughs were traded back in this way. I was informed in Minneapolis last January that a good many of the Little Doughs are still on the job in favored sections, performing with high efficiency. Then, of course, there were a good many farmers who bought them, got sore at them and remained everlastingly sore. Nothing would persuade those chaps to trade, no matter how favorable the terms.

But the important fact is that the Little Dough and its shortcomings were lived down in a surprisingly short space of time and the Big Dough came on the market and made a killing. It did really more than make a killing—it set a pace for cash sales that made the heads of certain old-line implement manufacturers buzz like pinwheels.

IV

How the Miracle Was Brought About

WHEN I got out to Kansas City in the autumn of 1915 I began asking questions about how the small tractor was going in the Southwest. The Big Dough, bear in mind, is a small tractor, sold to pull two fourteen-inch plows through almost anything. It weighs round 5000 pounds. I was informed presently that the light-weight tractor was in the way of being a screaming success in the Southwest. The representative of a concern that doesn't make anything in the nature of the pony-sized tractor said to me:

"And these little fellows are selling for cash too. There's a firm here in Kansas City of three young men who have switched over from the automobile business and have taken on the Big Dough tractor. They are selling scads of them and getting the farmers' cash every time. They are the distributors for this territory and they are selling through sub-dealers. It could not be done, but they are doing it. You'd better drop in on them and hear what they have to say."

I dropped in on them and got their story. There are three young men in the firm, two of them brothers, and one of the brothers red-headed and locally famous as an automobile salesman. Yes, they had swung over

into the tractor game the year before, selling the Little Dough. They had sold 500 Little Doughs—all for cash—in their territory in 1914. But, shucks, that was just a nibble. They had sold approximately 1000 Big Doughs in the same territory since the spring of 1915. It was early in October when I got these interesting details.

He seemed a mighty brisk and alert young man, he who did the talking. He looked after the financial arrangements. The firm's books were at his elbow. He opened one and thumbed the page.

"Total business up to October first," he said, "$490,000 for the season—and we got *cash*. Every time. We do not think a whole lot of the record at that, for we could almost have doubled the business if the factory could have speeded up the output.

We followed the same sales method we had been accustomed to follow in the sale of automobiles. We shipped our tractors with bill of lading and draft attached. No credit to anyone, farmer or dealer. We paid no attention to orders that were not accompanied by at least ten per cent of the purchase price.

"Just a minute while I answer the phone."

His end of the telephone conversation was this: "Who's that? . . . The X & Y Plow Company? . . . Yes, yes, we have done business with that dealer. . . . What's his credit rating? Blest if I know or give a rap. We don't use any rating book in this establishment. We sell only for cash. Sorry we can't help you out, old pal. Good-by."

As he turned away from the phone he beamed.

"That poor implement cuss," he chuckled, "is worrying his head off about the credit rating of some little dealer down in Pawnee County, Kansas. They are probably trying to load him up with more stuff than he knows how to sell, but want to look up his past history and previous condition of servitude before they take the leap.

"Now, we sell that chap only what he is so anxious to get and make a commission on that he'll hustle his pins off to get the cash to take up the bill of lading. We've sold tractors through at least a hundred of these little dealers without acquiring a gray hair. We have made a rather surprising discovery too—that a lot of the shaky ones, or so-called drone dealers, will exert themselves about three times as strenuously to make a cash sale as they have been accustomed to do in their long-term-credit business.

"There was the case of a dealer down in Amarillo, Texas, who sold twenty-three tractors on time last year. Of course he had to get 'em on time to sell 'em on time. Well, there was only one of his twenty-three customers who met his payments. The dealer wrote to us and told us what a brilliant performer he was in selling tractors. Wouldn't we send him a sample on time?

"We replied that we didn't deal in samples and that we had an automatic system of opening and closing our accounts simultaneously. If he felt quite confident he could sell one of our tractors we should be glad to let him have it at the trade price. All we should require from him was an advance payment with his order to cover all freight risks; then the tractor would

come down to him with the bill of lading and draft attached.

"Yes, he bought a tractor our way, and he sold it too—for cash. Then he bought some more the same way and sold them ditto—all for cash. The first thing you know that fellow will offer cash to a plow man and thereby cause a demise in the plow industry."

While his father, an old-time implement man, sat by and looked on with an expression of ecstatic appreciation, as of a fond parent listening to the miraculous achievements of a beloved offspring, Mr. H., Jr., recounted his selling efforts and their results without any attempt to brag. I wouldn't say that he was shrinkingly modest, but the impression I got was that he was more gleeful than boastful over the result he, his brother and their partner had obtained.

As if to soft-pedal any notion I might obtain that he was bragging he explained: "We simply followed the selling policies that were built into the automobile industry and proved they would apply to the new small tractor.

"One of the little stunts we did that made a hit was to bring in a trainload of Big Dough tractors and announce the fact with sufficient volume of voice to attract attention. It was the first big trainload of tractors that had ever been assembled at a tractor plant and shipped out in one screaming unit.

"There were forty-three cars in the train, and there were five or six tractors to a car. It was a $150,000 trainload, and the cars were plastered with posters so that none of the rural inhabitants in Minnesota, Wisconsin, Iowa and Missouri, who saw it going by, would

have any doubt as to contents. And when it came tooting into Kansas City quite a few folks turned out and rubbered.

"I only wish now that it had been two trainloads, for we sold that one so fast that it cleaned us out in no time and left a big gap before we could hope for another shipment. Our allotment of 1000 tractors in three months was a big one, but the demand was such that we could have doubled the record if the manufacturers could have kept up the output.

"Every condition for sale was favorable in the Southwest. The price of gasoline was 'way down; wheat was selling at war prices; French and British purchasing agents were scouting the plains for horseflesh. All a farmer had to do was to sell two or three farm chunks and buy one of our tractors. He could wait to cash in his crops later.

"There was a rip-roaring demand for light tractors, but don't imagine for a minute that we simply put the stuff on the counters, labeled it and priced it, and waited for the farmers to come up and buy. Nor did we leave it to the dealer—automobile, implement or otherwise. Our salesmen went out and everlastingly hustled for business, among them my brother Nick.

"Nick is six feet tall, wide in the shoulder, deep in the chest, freckled and red-headed."

"And the best natural-born salesman in the Southwest," interjected Mr. H., Sr., and then lapsed again into beaming silence.

"Yes, Nick is a crackajack salesman," pursued Nick's brother. "He was the best automobile salesman in Kansas City, which puts him up pretty high.

"Now, a lot of the people who try to sell things to farmers suffer from the delusion that the way to go out in the country and make a hit is to stop shaving and dress like a recruit in Coxey's army. As I heard one solemn ass propound it: 'Don't go near a farmer looking like a city dude, or he will immediately suspicion you of selling gold bricks.'

"Rot, net. A real front makes as big a hit with the farmer as with any other human. We proved that when we began selling automobiles to farmers. If you are going to peddle tinware from a cart it may not pay you to put on much of a front, but if you are going to sell anything that runs into real money, why, look the part.

"Before Nick went out to sell tractors he had several seventy-five-dollar suits of clothes built. They weren't somber blacks and blues or old-fogy pepper-and-salts. They were clothes that announced themselves quite a piece up the alley. You could see 'em comin' and, as the old saying goes, you could hear 'em a long way off. They were plaids and stripes, but of the finest material and workmanship, silk-lined and with a monogram on the inside pocket of each coat.

"There was real garnish to Nick's clothes, but he didn't make the mistake of adding to the outfit a boiled shirt and top hat. No, he wore a hickory shirt, a crimson tie and a big, white Texas hat. He wore big, substantial shoes. Also, he carried a thumping big cane. He looked husky, hardy, unusual and prosperous.

"When Nick went into the field to interrupt a farmer in his plowing and shook that farmer's hand and slapped him on the back, that farmer was interested. Nick's red hair, his smile and his gift of conversation

did the rest. Wherever he got out in the open he drew a crowd, and I never heard tell of any farmer referring to him as a dude.

There was one old fellow in the Texas Panhandle who bought two tractors from Nick, then got the name and address of his tailor and ordered a suit twin to Nick's.

"During the selling season we had five experts on the road all the time, and we saw to it that they wore good clothes, stopped at the best hotels and made a front. These were just tractor experts, and they went from agent to agent and from dealer to dealer, giving demonstrations and instructions in their districts."

"Whenever we got a kick from a purchaser anywhere we telegraphed to the expert nearest him and had him hustle out to that farmer to render first aid. In addition to these tractor experts we employed a little staff of plow-hitch experts. They did nothing but go round and show farmers how to get the best results with their plowing outfits."

"Did you recommend any special line of plows?" I asked.

"Yes, and went even farther than that. We sold engine plows for cash to tractor buyers, and sold a raft of them. That makes a mighty interesting little side-issue by itself.

"We went to a big plow concern and told them that we would like to take on a two-bottom gang especially adapted to our tractor. We would buy them on a cash basis and would sell them for cash. In this way we could sell them to the farmer for about ten dollars less than he could buy them on time.

"'But the farmers won't pay cash for them,' said the manager of this plow concern. We thought they would. We offered to make a try at it with fifty gangs. No, they wouldn't put out any special gang for us in such a little order. If we wanted to plunge into cash sales of gang plows we'd have to make a real plunge. They'd make us a minimum of 200. They would build us any number above 200 we could dispose of during the season. The plow man smiled when he said this, then added:

"'You fellows will be bucking about a dozen big plow concerns in the same territory—concerns that are selling on easy terms. Better consider what you're up against before you wade into the mire.'

"Well, we talked it over and decided to wade. We took a chance on 200 two-bottom gangs. The plow people sort of smiled up their sleeves when they took the order. They were confident we'd have at least 125 gangs left on our hands.

"What happened? The impossible. We sold the 200 gangs as fast as the manufacturer could fill the order. Every one of them for cash, of course. Then we reordered. Up to date we have sold a few more than 700 of those engine gangs. We sold a goodly number of them in the territory where the maker of the plow was pushing his own sales on time. We sold for cash right under the noses of dealers who were putting them out on time. Farmers who had ordered these engine plows from dealers on time canceled their orders and bought from us for cash.

"Oh, no, cash discounts don't appeal to farmers! We'd had that dinned into our ears all the time we

were selling automobiles. But we sold automobiles for cash to farmers, then we sold tractors to them for cash, and when we made the price right and gave them what they wanted to buy—not merely what we wanted to sell—they bought their plows for cash."

"Not once did we take in any paper equivalent for money; cash only. We haven't carried a cent of paper since we started selling tractors. We have been selling cylinder oil by the barrel to tractor buyers on the same C. O. D. basis, a deposit with the order and bill of lading and draft attached to the shipment. We made the man we bought oil from put up a $20,000 bond to guarantee its quality.

"You will hear it theorized that the long-term-credit arrangement is a great aid to increasing volume of sales. That may be true in some territories and with certain lines of merchandise. But here is how it worked out with engine plows: The makers built 150 for their own long-term-credit trade; they made more than 700 for us.

"When our 700 were sold their dealers still had twenty to thirty per cent of their owed-for gangs on their hands."

This young reaper in the vineyard of cash sales told me he was planning to take on other tractor specialty attachments, among them a small separator capable of threshing from 600 to 800 bushels of grain a day. Customers will be given the privilege of buying these attachments for cash. The firm had also visualized a promising young market for silage cutters, feed grinders, and divers other appliances that the belt power of a small tractor could take care of.

"We have found," he explained, "that there is no better way to clinch our selling arguments than to demonstrate how much the farmer can do with the belt power of his tractor. In our future selling policy we shall emphasize this attractive utility to the limit. But we shall take every possible precaution not to overstate the belt power, and strive to the utmost to locate for the purchaser the ideal apparatus to hitch up to his tractor."

It struck me that the experience of this very wide-awake and down-to-date firm of distributors was worth dwelling on at length. They may be an exceptional trio of young men, and in their territory there may be an unusually high percentage of more prosperous farmers.

Yet, allowing for all this, the record of their achievement stands out by itself. They set a pace for competitors that ran them off their feet. They bucked the competition of a so-called great monopoly and beat its selling force to a frazzle.

There were twenty-nine other distributors for the Cold Dough Tractor Company working along similar lines. None of these twenty-nine could match the record of the Kansas City Hustlers, but there were some who produced amazing results on territory that a few years ago was regarded as absolutely hopeless for the marketing of any sort of tractor.

Up to January 1, 1916, the thirty distributors had marketed a total of 8000 tractors for cash within a period of two years.

Undoubtedly this will sound to some farm-implement purveyors like fiction. But it's cold fact.

V

Tractors are Not for the Physically Unfit

A FARMER well along in the seventies wanted to buy a tractor. He was still robust and relatively as hard as nails. He had been running an automobile for a year. He had been tending a thirty-horse-power gasoline engine for five years. He had installed an electric lighting-plant. He had developed a rare skill for mechanics. Some of his neighbors had tractors and he had watched them operate. He had attended two tractor demonstrations. He had perused and reperused a small library of tractor catalogues.

His 200-acre farm, 160 acres in cultivation, was a profit-producer. He could afford to buy a tractor and pay spot cash for it. He had bought his car for cash. He had got the cash habit. As the itch to buy a tractor developed into higher stages, he determined to buy a tractor that couldn't be bought otherwise than on a cash basis. He reasoned simply: If I buy from those cash-sales chaps I'll not be holding the bag for any other fellow's bad debts.

This old fellow didn't sit back home and wait for a tractor salesman to come out to the farm. He talked to a few dealers, but they were so shy of certain specific information he wanted to get that he made up his

mind to go to headquarters. He would drop in at the nearest big branch house and put his hard questions to those higher up. So he packed his bag and went to town.

The keen young manager of the branch house was on the job and received the venerable prospect with his accustomed graciousness.

"I've about made up my mind to buy one of your tractors," said the farmer, "but before I do I want to ask a few questions that are not answered in your catalogue or covered in your advertisements."

"Do you expect to run the tractor yourself?" asked the young manager.

"Why, yes, of course," said the old fellow. "That's why I'm buying it."

"Nothing doing—it can't be done," said the young man.

The old farmer was flabbergasted. He stammered a plaintive: "W-w-what? I—you don't mean I'm too old?"

"That's the answer—pat," said the young man.

"But," protested the farmer, "I run a car. I take care of it. There's nothing much I don't know about internal-combustion engines. There's my shop—I take care of all my machinery, binders, planters. Why, I can take a separator apart and put it together again. And I'm strong and well. I drive a three-bottom sulky. I guess you don't realize. Then all you fellows say that the tractor makes farming so much easier—not so much stock to handle and the heaviest work cleaned up and put behind in a jiffy. Five acres plowed while you'd be plowing one with a team, and so on."

The young man continued to shake his head.

"Bad business," he said finally to the perplexed old man. "Get out of your head that running a tractor is a soft job. There's all the difference in the world between driving a tractor and steering a rubber-tired motor car over silk roads. It would be suicide for a man of your years, no matter how hard you think you are, to tackle it. You'd overstrain. The jar and jolt of it would shatter your system. A husky young boy could stand it. Any man in his prime will fit into it. If you could begin at it with an expert's skill and experience you might suffer no damage. But it's my frank opinion, sir, that your experience lessons would about finish you. Tell me now—have you seen anywhere, at demonstrations or in practical service, a man of your years driving a tractor?"

The old man shook his head.

"There you are. Of course you haven't. You've seen the young huskies at it. You've seen the big fellows in middle life with the hickory muscles and oakboard chests sitting back of it, smoking their pipes, handling the gears and plow levers and steering wheel as if it were pie. If you'd stepped up close you'd have noticed that they were sweating some. If you'd been sitting up beside them you'd have felt the jar and jolt and quiver of it.

"My dear sir, I don't care how small the tractor is, it's not a rocking horse for an infant nor a rocking chair for grandfather. Possibly it isn't good business for me to tell you all this. I'm a sales manager and I'm hired to push sales. Your money's as good as any other fellow's and on that business theory I suppose I could

sell tractors to the lame, halt and blind and ease my conscience. If our sales were lagging back and I turned down a prospect like you I'd probably be counted in among the dubs who ought to be dispensing charity instead of making sales.

"It just happens in your favor that we're about smothered with orders, wherefore I am displaying another sort of business wisdom by placing our product with the sort of men who can give us the best advertisement. I am turning down all prospects who don't look up to the mark as likely demonstrators of the Great Dane Tractor.

"I am selecting out the leadership type of farmers wherever that is possible. Bunglers and boneheads can do us no end of harm. So can the physically unfit. When we hire experts to demonstrate our tractors we employ the best that money can buy. We want them to be wizards at it.

"Suppose we were selling pianos. We wouldn't hire plumbers or gas-fitters to play them. Suppose you heard a piano going in a neighbor's house. If some talented artist were playing it you'd want to own one right away. If some dairy hand were pounding it with his eyes shut, just to make a noise, you'd never want to see a piano within fifty miles of your home.

"Now, it's my guess that you'd feel a good deal the same about a tractor if you saw some square-head speeding it through a rock pile and turning zigzag and whirligig furrows. You'd regard it as a hellish contrivance.

To sum it all up then, it would be rotten exploitation on my part to sell you a tractor."

The slick business man will chuckle over this little incident and probably feel inclined to compliment me on the resources of my imagination. I can only say in reply that I sat in at the colloquy. After having attended several tractor demonstrations I naturally could hardly believe the evidence of my senses.

I vividly recalled a frantic-eyed, wire-haired salesman who went about buttonholing octogenarians and shouting in their ear trumpets that running the Sugar Baby or the Little Buttercup Tractor was away yonder easier than wheeling an invalid's chair. The small tractor had been invented as a solace and comfort for old age. It would abolish for all time the inclination of farmers to retire from farming. It would bring countless thousands of farmers out of retirement. Not only could old men run tractors, but elderly women who required more vigorous exercise than knitting as a nerve tonic would find tractor driving a refreshing and rejuvenating pastime. And so on.

I admit that this is not the exact language I overheard, but the exaggerated statements were as absurd. Automobile salesmen have not been guiltless on this score. If you ever set about the purchase of an automobile you were probably sung to in many variations of enticing melody. And if later on you bought a car you must have had a quiet smile if not a gentle cuss to yourself over the amazing gap between promises and performance. You yourself were more than half to blame for the discrepancy. You desired the impossible. You yearned for the miracle of perfection. You chloroformed your common sense and lived in fairyland.

Of course, the automobile-buying public has undergone a vast change in the past decade. As the motor car itself gradually evolved to standardization, so did the buying public. You might almost say that there are millions of auto-wise infants who have scarcely finished teething. The schoolboy who cannot tell a carburetor from a differential is regarded by his juvenile fellows as a stony boob. And the automobile salesman no longer promises you Phaëthon's chariot and the endurance performances of that supernal steed, Pegasus.

VI

Visualizing the Tractor Market

THE tractor salesman of this current year 1916 is almost a new species. The fact that he has been a successful dispenser of automobiles or threshing machines may be a lift on his way, but it does not give him a running start. If he attempts anything in the nature of reckless exploitation he is going to make a false step, trip over a stubborn obstacle and have the solid earth come up and bruise him.

The tractor sales manager has a good deal stiffer job in visualizing his market than the automobile sales manager. Anyone who has the cash or who can beg or borrow—yes, or purloin—the cash is an automobile prospect. A guardian may purchase one for an infant in arms and charge it up to the estate. The centenarian, if financially fit, is just as good a prospect as any aristocratic young Ajax or humble piano mover. Extreme infancy or extreme old age is no bar; sex is no bar. Every and all callings and occupations are included.

Relatively the visualization of the automobile prospect should be pie. Just consider what the tractor sales manager is up against:

Ninety-something per cent of his market is confined to farming areas, wherefore ninety-something per cent

of his prospects must be farmers. The remaining fraction of market is confined to specific traction enterprises, such as road making, the heavy hauling of artillery and commissary in wartime, contract sod breaking and certain forms of ditching for drainage. For the time being we would better lay aside the special utility field for tractors. The farmer is the star of vaster magnitude and an analysis of what he is and what he farms must be the guiding beacon to the tractor sales manager.

To begin with the top census total of 1910, there were 6,361,502 farmers in the United States. Now, to shave this total down by various processes of elimination:

First, let us subtract the negro farmers, as they are almost an irreducible minimum as tractor prospects. Of white farmers in 1910 there were 4,771,000. This total may be divided between 3,162,584 owners and 1,558,392 tenants.

Admitting that there may be many thousand tenant prospects, the owner prospects are of major importance. We must add to the ownership total 58,000 farm managers, who, generally speaking, operate large areas for nonresident owners.

But it is not with mere numbers, color, nativity or tenure that the tractor sales manager must reckon. The farm—its size, kind and character—is his chief concern after he has come down to a working basis of totals. Unless he is a good deal of a visionary he will paste up somewhere within sight the total number of all American farms of a hundred acres and larger. This should apply no matter how light a small tractor he is selling.

The kitchen garden tractor is arriving, to be sure, but it does not enter into the real farm-tractor reckoning. Nor can we yet see where the one-plow tractor will fit into our agricultural economies.

The hundred-acre and larger farm will offer an excellent working margin, far too wide a one perhaps. I found several tractor sales managers who said offhand that the eighty-acre fellow was just as ripe a small-tractor prospect as the hundred-acre man, but if you attempt to figure that way you are sure to race the engine of your optimism. Iowa is an ideal tractor state, because of the even contour of her farming areas, and if the eighty-acre man could use a tractor anywhere the exceptional opportunity should be in Iowa.

When I saw the late Henry Wallace at Des Moines in January, 1916, he told me that he had been making a careful study of his state as a tractor prospect. He summed up the situation in this way:

"The man with eighty acres has no business with a tractor at all. He has got to have a team of horses whether or not he has a tractor. If he took on a tractor he would be adding just so much overload mechanical power. As it is, he is struggling desperately to compete with the 160-acre and the 180-acre farmers. He has to equip his farm with practically the same machinery as the men with larger farms. His investment load is just as heavy and he has not nearly the margin of production possibilities of the big fellows. Unless the little fellow goes in for dairying he simply cannot stand the competition.

"As the tractor comes into use on a sure profit basis the eighty-acre man will find himself tugging away to

the limit of economic endurance under the strain. He will simply be compelled to take on more land to farm or else go into dairying. At present there are only 6000 eighty-acre farmers left in Iowa and that number will continue to shrink.

"The tractor will in the next few years make a big impression on the farming of the Middle West by increasing the size of farms and driving more farm folk to the towns and cities. As compensation, though, it will surely increase the prosperity of those who remain in farming. My belief is that the 150-acre man is the minimum light-tractor prospect, and that as soon as he learns how to adjust his farm management to the best economic service of the tractor he will soon expand into the 300-acre man."

With these carefully considered words of wisdom in mind the tractor sales manager should carry the following table in his head:

Farms in the U. S. A. of 100 acres and over,	2,669,891
Farms in the U. S. A. of 174 acres and over,	1,153,605
Farms in the U. S. A. of 300 acres and over,	501,500
Farms in the U. S. A. of 500 acres and over,	174,430

The man who is selling a two-plow tractor would do well to add to this table that there are in the United States 1,516,286 farms of 100 to 174 acres. The man with the three-plow tractor will be more interested in the total number of farms from 174 to 260 acres in area—534,191. The man with the four-plow tractor will probably confine his market to a large extent to the 443,984 farms of 260 to 500 acres.

There is nothing like the magnificent range of prospects you will find in the automobile field, but there

is an inspiringly large market nevertheless. There is this great difference between the automobile and the tractor market:

On January 1, 1916, the United States had registered in the various states 2,423,788 automobiles and motor trucks. The 1915 sales totaled 686,998 cars. Production possibilities for 1916 were estimated at above one million cars and trucks. Installment selling was being launched on a wholesale plan.

There are available no authoritative figures for tractors. Development has not yet reached a point where tractors are taxed and registered. Unless they are taxed they are not likely to be registered. And as I have remarked before, Kansas is the only state that so far has attempted to make a tractor census.

It was roughly estimated last summer that there were about 20,000 tractors in use throughout the United States. This included steam and gas tractors, road engines and farm engines.

So far as I have been able to gather estimates from various tractor manufacturers, more than 20,000 farm tractors were manufactured in 1915. The volume of production lagged way behind demand—emphatically so in the case of the light tractor. One light-tractor maker alleged that he could have doubled his sales if he could have turned out the product to sell. He sold 5000 small tractors in 1915. Another manufacturer made and sold 3500. Both these makers planned, so far as plant equipment could fulfill their hopes, to double their output in 1916.

There is every possibility of at least 100 per cent increase in production for the current year. Some tractor

enthusiasts put this likely increase at 200 per cent. You also hear of one automobile manufacturer who is planning to build 100,000 pony-sized tractors a year. This would mean a deluge of tractors that would cause the hair of the old-line implement manufacturers to stand on end. But it is not at all likely to happen for a year or so, and when it comes, the tractor industry may have straightened itself out somewhat on a basis of standardization and fairly conservative exploitation.

The big drive of the large tractor in the early boom days was made in the Northwest. The present drive of the small tractor—the two-plow, three-plow or four-plow machine—is being made in the East North Central, West North Central, and West South Central States. These divisions include: East North Central—Ohio, Indiana, Illinois, Michigan and Wisconsin; West North Central—Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska and Kansas; West South Central—Arkansas, Louisiana, Oklahoma and Texas.

Beyond this area tractor sales are at present regarded a good deal in the light of seepage. The Middle Western prairies and the Great Plains afford ideal contours for the tractor. And the mechanism of the tractor has been developed to meet the requirements of level and gently rolling land. Ridge-running and gully-jumping tractors may evolve in the course of time. Meantime the mule and the horse are in no danger of becoming extinct in the hilly farming regions of the United States and Canada.

The tractor sales manager will undoubtedly make a careful study of the plateau and plains regions. He will

also discover that there are a good many millions of acres of level lands beyond the areas within which the tractor drive has begun and gathered amazing impetus.

But of the total of 978,175 farms ranging in size from 715 to 499 acres, 620,876 are in the East North Central, West North Central and West South Central States. Of the 125,295 farms of 500 to 1000 acres, 78,558 are confined to the same locality. When you get up above 1000 acres you find the same preponderance. The total above 1000 acres is reckoned at 50,135. Of this number 12,875 are in the West North Central and 13,396 in the West South Central. Then we must drag in the Pacific States of Washington, Oregon and California, with a total of 8135 big farms.

The Southeastern Cotton States have about 7000 plantations of 1000 acres and over, and in the Mountain States of Idaho, Montana, Wyoming, Colorado, New Mexico, Arizona, Utah and Nevada there are more than 6000 big ranches. The majority of these are stock ranches, though gradually they are coming more and more into the category of farms. Where the big rancher of the Pacific and Mountain States has swung away from ranching into farming he has been a pioneer tractor user. He has been the superprogressive fellow to try out tractor possibilities, and he had done this gamely and without the quiver of an eyelash while the tractor has been in the rawest stages of inefficiency.

VII

Knowledge of Farm Management Essential

LOOKING over the scramble for tractor plums during the present wave of great demand for small tractors one would think that census figures were unavailable and that the general run of our farmers were crop gamblers rather than steady-going husbandmen following the calling of their ancestors or pursuing the fundamental instincts of progressive mankind.

I have talked to some promoters of tractor manufacturing enterprises whose knowledge of farming seemingly had been gleaned from perusing the rhapsodies of back-to-the-land poets. If a farm was a 100-acre farm, why there were undoubtedly 100 acres to till and plant to crop. They read of 900,000,000 acres in farms, but they did not follow along and learn that only fifty-four per cent was improved or in cultivation. They did not consider the immense area of pasture land that lies out from year to year as a matter of necessity in good farm management. Or if they did reckon with this area of pasture land, they simply jotted it down among the plowing possibilities overlooked by tractorless farmers.

Both the tractor buyer and the tractor seller must in the future make a far more intensive study of farm

management than has hitherto been the custom, and this farm-management study must go away beyond just tillage, planting and harvesting. A small tractor does not eat its head off, but it is surely not going to earn its way simply because it can do all the heavy work on the small farm in seventeen days out of the 365.

Diversified utility for the tractor will be found to be the big selling argument of the future. The farmer should demand and the tractor should supply both a surplus of draw-bar pull and belt power. The small farm must be gaited and adjusted to utilize the limits of belt power the tractor affords. The accessory power of the tractor on its off days should be its big dividend payer. If there are only forty or fifty acres to crop, the necessity for diversifying the uses of the tractor are all the greater.

I visited the headquarters of a great concern that has been marketing small tractors for a year and a half. They call it an Eight Horse Tractor. One of the optimists of the management forces said that this little fellow was a distinct economy for the hundred-acre farm. I asked if they had checked up on results. Yes, they had been collecting and compiling a lot of correspondence. A great pile of letters was pointed out. I looked through them, but found no reports from the hundred-acre farmer—that is, none that were of any constructive value. Here are a few samples of what I did find. The first is a Kansas letter:

I beg to inform you that I have one of your small tractors and am much pleased with it. I have but a small farm close to town, but bought the tractor principally to haul sand and cut silage. Have

had it since about May first and have kept it busy nearly every day. Plowed 100 acres of ground, pulling four disk plows, and it seemed to do it with ease. Plowed about ten acres a day at a cost of $1.25 a day for coal oil and fifty cents a day for lubrication, making the cost $1.75 a day for each ten acres. It is very simple and does not give me any trouble. Am pulling one of your twelve-inch silage cutters now, cutting fifty tons a day, and it seems to do it with ease. The running expense seems to be just the same as with plowing.

If there were a hundred acres to plow in this "little Kansas farm" certainly it was not a hundred-acre farm. Here is another letter from another "little" Kansas farm:

I think it a good investment, but cannot say for sure, as I have not kept an accurate account of the number of days or hours put in. But I made a rough estimate and it has cost me about ten or fifteen cents an acre for plowing. The disking, rolling and harrowing, which I did at one and the same time, cost me from five to seven cents an acre besides my own labor.

I plowed fifty-five acres with a mold-board two-bottom fourteen-inch gang, and fifty-five acres with a four-disk twelve-inch gang, and I have harrowed, disked and rolled 130 acres for a total cost in coal oil, gas, distillate, lubricating oil and cup grease of twenty-four dollars delivered on my farm six and a half miles northwest of Salina. My farm is old black rubber gumbo of the worst type. I plowed but twenty acres with the teams.

Here is a letter from Hastings, Nebraska:

By having your small tractor I only keep one team the year round, making the tractor do all the work that it would take six head of horses to do. I have kept track of what it has cost me since I bought it. It cost forty-seven cents an acre to take care of 110 acres, plowing, harrowing, disking, drilling, pulling a 12-8 drill and a ten-foot drag in front of drill. I have used the tractor day in and day out since I bought it and have had no trouble at all. I believe if proper care is given the tractor it will last the life of a horse, as I am all through with my farm work and do not have to worry about feeding a bunch of horses through the winter.

Of course there were other letters containing laments and wails of grief. Some farmers had had trouble in starting; others complained of the gears. Some had

had fine success in baling hay, shredding corn, threshing grain, and in road work. It was palpable in many of the letters that the writers had been appointed agents to sell the tractor. But practically all the letters were based upon one season's experience. So far as I could see there were no letters of optimistic viewpoint worth considering from the hundred-acre farmer. The size of the farm was rarely stated, but on the average they must have run from 160 to 300 acres.

While still on the topic of the tractor market and exploitation methods I will set down a little list of advantages that are almost universally alleged in favor of the tractor:

More economical because it utilizes mechanical power, which can be produced more cheaply than horse power.

Concentrates power, thus reducing the amount of man-labor for farm operations, as one man can easily operate a gas tractor with a pulling capacity equal to forty horses, and at the same time have more dependable control over the power than would be possible with horses.

Unlimited endurance, being capable of working day and night during its entire life if necessary.

Requires comparatively small space for housing, and such shelter as is required need not be built for warmth but only for protection from the elements.

Consumes fuel of relatively small bulk, requiring little space for storage.

Requires no care when not in use.

Does better work because the quality is not lowered out of sympathy for tired animals.

Can be used not only for field work, but also for belt work.

Is not subject to sudden loss by disease.
Breaks can be repaired by substituting a new part.

Not all these so-called advantages are axiomatic. There was the case of the North Dakota farmer who had driven into town and was boasting in the general store of the great acreage of grain he was putting in with his tractor. He had just got along to computing the cost of plowing when he was called to the telephone. The Swede at the other end of the wire announced:

"Boss, Big Ben ban bust! I tank you better bring new Big Ben out, for I tank rain tomorrow."

"Anybody hurt?" asked the farmer.

"I tank Olaf hurt some," replied the farm hand. "I tank his leg broke an' maybe arm too, but he don't wake up so I can ask him. But I tank rain tomorrow, boss, so we ban need new Big Ben."

Of course, this was back in the days when the big steam tractors had a habit of popping off like a superheated Mississippi steamboat. The modern internal combustion engine is infinitely nearer perfection today than were those early devices. Nevertheless we are not yet able to be cocksure of tractor advantages.

Tractor benefits must be studied on their relative merits. There is an immense amount of research work ahead of us, both in the manufacturing plant and on the farm. The returns from the small tractor are just beginning to come in. Presently we shall be able to average up contending claims for specific types.

The makers of the three-wheel tractor are gathering their data, and the makers of the four-wheel tractor are gathering theirs. Disputes as to the most

advantageous size of tractor remain unsettled. The all purpose three-plow tractor men scoff at the two-plow tractor. Makers of a variety of sizes are still uncertain concerning what the future popular size will be. You get glowing reports of the operation of the bull-wheel in the furrow, and from another source you hear the bull-wheel in the furrow condemned as a hideous mistake.

Is it any wonder that some tractor exploiters feel inclined to tear their hair? They realize that a great industry is in the bud, but they are completely baffled concerning what the fruit will look like in its final stages of cultural development.

VIII

The Great Selection Problem for the Farmer

GOING it blindfolded! That is the situation with the majority of farmers who are picking tractors today.

It is not the fault of the tractor makers any more than it is the fault of the farmers. You may standardize the quality of your tractor to a superfine degree, but how about the standardization of the purchaser's ingenuity, skill, versatility, good or bad fortune in crop production?

You hear many sound arguments against the economic success of the small tractor, but you hear none to controvert the fact that the small tractor has come as an incalculable boon to the industry. The popular-priced tractor has in the short span of two years provided resources for the tractor industry that could not have been obtained in a score of years had it not been developed. The pony tractor has created cash-sale possibilities that could not have been contrived by any other means, and without cash-sale possibilities the tractor industry would have labored along under the same dead weight that has hampered the modernization of the implement industry.

From the manufacturer's standpoint volume of production was the great stumbling-block. A concern that

could not hope to make more than a few hundred tractors a year had little hope of cutting down manufacturers' costs. A manufacturer compelled to make all his own parts and castings could develop only a special narrow market for a quality product at a quality price.

If a group of manufacturers had got together and standardized certain parts and agreed to take the output of some specialty manufacturer of parts, a definite economy could have been accomplished. But the spirit of competition was not headed that way. Each separate maker seemed to desire as many selling arguments in favor of his tractor as there were parts. He wanted to be able to say that he had a better make of motor than the other fellow, a better carburetor, better ignition, better transmission, better cooling and lubricating systems, a better contrivance of bull-wheels or caterpillar sleeves for pulling and balancing the load, better belt-drive connections.

I heard it said that one manufacturer had boasted: "There are 22,000 pieces in my tractor and practically all of them are different and better than the pieces in any other tractor." Heaven help the owner who needed a few nuts and bolts of this tractor in a hurry!

When you get down to fundamentals, this sort of thing has occurred in the history of every mechanical development. The design is crudely direct and simple at the start—crudely inefficient too. Then the refining process begins and is attended by a mania for complexities. The next step is to eliminate the complexities and gradually approach a refined simplicity. Throughout every step the ratio of efficiency is being

increased and the road to standardization is being smoothed down.

Thanks to the small tractor the industry has already approached such standardization that it is possible for thirty-two makers to use one type of motor—that is, a type of motor made by one manufacturer. Sizes and adjustments are adapted to fit the special needs of different tractors. The same tendency will be followed in the cases of carburetors, magnetos, radiators, gears, transmissions, differentials, and so on. The development of the automobile has not only made this possible, but has really forced it upon the tractor industry as the only economic method of cutting the cost of production.

Automobile engineers have really done a great deal for tractor manufacturers by refining the essential parts of tractor mechanism. Both industries are striving now toward the perfection of a system of coal-oil carburetion. While some oil-burning tractors are advertised as equal in efficiency to any rival gasoline burners, they have yet a long way to go to prove that the combustion efficiency of kerosene equals the combustion efficiency of gasoline. Nor, as a matter of fact, will they ever succeed in raising the B. T. U. ratio of kerosene to the B. T. U. ratio of gasoline. What they may do and what they are striving toward is to develop a combustion mechanism that will give kerosene the same fuel dependability as gasoline. If they accomplish this, they will achieve great economy.

As a general thing, farmers in this country have been learning a good deal more about the four-cylinder high-speed type of motor in the past few years than they

have about one and two cylinder oil-burning tractor motors. Manufacturers who jumped into the tractor game overnight felt that they could supply the popular demand by simply grabbing a four-cylinder automobile motor, common types of automobile carburetors and magnetos, and slapping them into any old sort of tractor frame. They suffered from the obsession that if a tractor ran and developed a definite amount of power, that was all that was necessary. They didn't even bother to hitch on a plow and see if the thing would buck or not.

In the days of the 50,000-pound leviathan tractors no one bothered about bucking propensities. The chief thing was to get it started and keep it going. When they got down to the 4000 and 5000 pound tractor it was not so much a case of spinning the flywheel and keeping the motor warmed up to its job as of keeping the "featherweight" from imitating an aëroplane after the plows had bitten into the sod. Nice adjustments and balances of weight were required. The plow hitch became essentially important, to avoid side-draft and to get the highest efficiency of pull.

A great many of these little fellows were underpowered, even for their weight, at the start. Some of them still are. The great need for surplus power was not fully understood. How could it have been otherwise when the rush products that were flung on the market had had practically no testing out? Early last winter I was talking to a manufacturer who has been making a medium-sized tractor advertised to develop twelve horse power on the drawbar. I asked if he were going into the popular-price field.

"Oh, yes," he said, "we're going to get out a little one. I have an engineer coming down in a day or so to draw some plans."

"Then," I said, "I suppose it'll be a year or two at least before you commence to market it."

"Year, your hat!" he returned breezily. "We'll be turning 'em out in ninety days after we approve of the plans. The time is ripe to sell the baby size right now and we are going to get into the running while the running is good. We're making five a day of this medium size now and we can't begin to fill the orders."

It is the barest of all chances that this man will turn out a product that will render any sort of dependable service. But then, his chief desire is to make something that will sell, and sell in sufficient volume to make a killing while the going is good.

Just for the sake of drawing a parallel, take the case of an Ohio tractor manufacturer who parts his name in the middle with the word Thorough. He has been manufacturing a four-plow tractor for five years—one of the very best of its size and type; sold to develop fifteen horse power on the drawbar, and honestly made to develop a surplus above that. It is a real-quality product selling for $1750. The first year he made twenty-five tractors, the second year fifty, the third year 250, and this year he will make 500. Before he sold a single tractor, however, he experimented for two years with twenty different models.

This man's early selling experience convinced him that the greater number of small farmers would not buy four-plow tractors. The man with 200 acres of grain could operate it economically, but there seemed

to be few good prospects operating less than 300 to 400 acres. He might double his sales from year to year for a few years and yet make no advances in the volume of production. So he got his experts to work designing a ten-horse-power tractor that could be sold for about $750. The first model was built three years ago and twenty-five of these models were distributed in different parts of the country for experiment—distributed, not sold.

These models were tested through an entire season for tillage and for belt power. They must have diversified utility and a reserve of power above selling specifications. Model No. 1 fell down. Here and there it made good. But the average of excellence fell below fifty per cent. The following year Model No. 2 was built, and the tests were repeated. It was a big improvement over Model No. 1, yet there were some serious kinks to be ironed out. The average of efficiency was higher, but not high enough. This man was not looking for a killing. His aim was to found a big business on bedrock that had no fissures in it. He was in no passionate haste to make money. He had spent many years of his life building up a reputation for business integrity and he was jealous of that reputation. He had amassed a large fortune slowly and conservatively and that was the way he intended to develop a tractor. Hence he built Model No. 3.

He introduced No. 3 as his 1916 model, having demonstrated to his satisfaction that it was a dependable mechanism. He had built forty experimental machines, but none to sell. He had selected forty farmers in widely scattered farming areas to try out

Model No. 3 for the entire season. His experts had picked the farms and the farmers. They had covered the East and the South, the Middle West, the Southwest, the Northwest and the Pacific States. Model No. 3 was distributed to tackle almost every type of soil and a wide range of climatic and soil conditions. It pulled plows over platterflat prairies, over rolling meadows and aslant the terraced hills of Georgia and the Carolinas. It tackled shale deposits and tule gumbo, the staked plains of the Texas Panhandle and the cut-over lands of Northern Wisconsin and Minnesota. It was driven by farmers who are expert mechanicians and by farmers who are raw beginners. It was tested for the highest possible efficiency in the hands of the wizard and for the lowest standard of efficiency in the hands of the bungler.

The little fellow that comes through a test of this character and stands up on a basis of all-round performance is an honest product that both the dealer and the farmer should scout for. Nor is this thorough method of testing out uncommon in the tractor field. At least a score of the manufacturers of recognized standing and stability are practically as thorough. This applies to both old-line tractor makers and implement manufacturers and to some few of the new invaders. It applies also to several automobile manufacturers who have been experimenting with tractors that have not yet come on the market.

But there are some big manufacturers of long-established reputation in other lines who have picked their tractor products out of the air and are tossing them on the market without putting their performances to

anything resembling thorough and honest tests. They are relying upon their names to sell these bubble flimsies and trusting to the hurry-up efforts of their engineers to eradicate the imperfections. In such cases the purchasers will be the goats, and their failure will determine the radical changes that must eventually be made to give service and honest value.

A few of the heads of these concerns have simply been deluded by so-called experts. They are too busy themselves to look into minor details, and must take the word of their subordinates. Possibly they conceive that the tractor has been sufficiently standardized to make it possible simply to assemble standard parts into a working unit, as is being done successfully in the automobile industry. If they look into this closely, however, they will soon learn that the tractor has at least half a dozen years of evolution ahead of it before its construction is a comparatively simple task of experimental design and assembly.

IX

Shall the Tractor Fit the Farm or the Farm Fit the Tractor

NOW that small tractors—five, six, seven, eight, nine and ten drawbar horse power—are being produced in great numbers, there is no end of discussion over the ideal size of farm to utilize them to advantage. Some academic theorists tell you flatly that any tractor developing less than eight horse power on the drawbar is a joke on a farm of any size. It is of utterly no use to the two-horse farm, you hear, because it cannot replace the team for cultivating and light hauling, and unless the owner can do considerable contract work for neighbors, he will never begin to get his money's worth out of his tractor. He will soon find, after he has tried out his tractor for a season, that he will have to add to the size of his farm as his only means of economic salvation.

It is further urged against the pony-sized tractor that it is not large enough to reduce man labor to any appreciable extent, nor powerful enough in many instances to perform all the belt work required on the home farm.

The salient argument for the big tractor has long been its ability to cut the cost of man labor. Take a *forty-eight* tractor for example. With one operator and

one plowman it could plow from twenty-five to thirty acres a day under favorable conditions. Where the land was free from trash a self-lifting plow could dispense with the services of the plowman. It would require seven or eight men and from twenty-eight to forty horses to produce the same results.

But the scope of such operations was extremely narrow, nor were the economies to be accomplished always definite. Hundreds of big grain farms tried the big tractor and went back to horses. The by-product utility of a tractor's belt power was overlooked to a great extent.

As the small tractor came into being its belt power was overcapitalized rather than overlooked. The machines it should operate on the farm—in theory—were not built down to the belt power of the small tractor. This was true of separators, corn shellers, silage cutters and various harvesting machines. The overrated small tractor fell down hopelessly when it came to the actual appliance of the much-vaunted belt power. There followed a two-way scramble to straighten out this defect —the rebuilding of the motor to develop more power and an appeal to the manufacturers of belt-power appliances to make smaller types adaptable to smaller tractors.

Nor was tillage apparatus quite ready for the arrival of the small tractor. Special hitches and adjustments had to be devised. It was found that the principles that had worked out well with the large-tractor gangs could not be followed with assured success with the small-tractor gangs. There was the ever-present tendency of the small-tractor operator to overload the

machine. Purchasers had been promised more power than the tractor could deliver, and there was no margin of safety. Told that the tractor could plow an acre an hour or thereabout, they would begin at the maximum and then speed it up.

The careful shifting of gears to produce the most engine efficiency cannot be learned in a day, even with the automobile. With the tractor this skill comes much more gradually. Drivers completely forgot how they had driven their plow teams through uneven soil. They expected the tractor to wade through anything without changing gears, without paying close attention to the nice adjustments of the plow lift. The three great trouble-breeders with the small tractor have been: Overloading, reckless driving and neglect of lubrication.

In behalf of the farmer it must be said that he was only partially to blame for overloading. So many of the small tractors had been overrated as to both drawbar pull and belt power that he was naturally misled. Manufacturers—the reliable ones—have hastened to correct this error. Tractors that were at first offered as three-plow tractors are now being sold as two-plow tractors. Some of them will pull three plows nine or ten inches deep through light loams, but when it comes to heavy soil they are two-plow tractors. It is wise to list them and advertise them as such, allowing the purchaser to exhaust surplus power at his own risk.

The returns from worth-while economy and endurance tests of the small tractor have just begun to come in. They are not as yet comprehensive enough to base any final judgment on. I have met some men who

predict that the two-plow tractor will be pretty generally discarded in a few years as too small—too small at any price. They predict that the tractor that will be most generally used in the future must deliver at least an honest ten-horse power on the drawbar and pull at least three plows from seven to ten inches deep.

The three-plow tractor, they argue, will not only render the small farmer efficient service, but will accomplish for him immediate economies that will enable him to increase his farming operations and expand his farm area. This will be a case of enlarging the farm to fit the tractor. The other way round will never work out. A cropping area can never be pared down economically to fit the size of a tractor.

Data collected from Illinois and Indiana prove pretty conclusively that farmers who began with small tractors bought larger ones; that they graduated from the two- and three-plow class into the four-plow class. In few if any recorded instances, say those who have been gathering statistics, have farmers who began with four-plow tractors bought down into the two- and three-plow class. But it should be explained that the majority of those who bought large tractors have added to their cropping area by buying or renting additional land.

One close observer of tractor tests—actual farming tests—had this to say: "The data I have collected show that the fifteen-thirty tractor has had a larger percentage of successes than any other size except the very smallest ones. These very smallest ones, however, have not been in use for a sufficient length of time to enable the users to give an opinion of definite value.

"As I size up the situation, the manufacturers of the pony-sized tractor have built for demand, not because they believe it to be the best machine for the average farmer. In fact, many of them are convinced that the pony-sized tractor is altogether undesirable and will do more harm than good. But"—a vastly important *but* if you follow closely—"there is no reason to doubt that the small tractor, selling at a low price, is destined to put the industry on a more substantial basis than it has ever known. Frequently a farmer will take a chance with a small tractor when nothing could persuade him to buy a larger one. This will tend to expand the field of experimentation, and is sure to increase the general demand for all sizes of tractors."

Too many of the theories you hear argue round in circles. They begin with a flimsy premise and wind up with a contradiction. The pony tractor is a fallacy, *but*——. The big tractor is a fallacy, *but*——. The medium-sized tractor is ideal, *but*——. The great puzzle for the future must be to determine the happy medium. And that happy medium must either be a medium-sized little or a medium-sized big tractor. As I see it, nothing can be a greater help toward the solution than volume of production that will gradually bring down the cost of all sizes of tractors—just what has happened in the automobile industry. And the greater the volume of production, the nearer the approach to standardization.

If this reasoning is sound, it must follow that the small tractor, instead of being an economic fallacy, is the greatest of all economic boons both to the farmer and to the manufacturer. There is an infinitely better

chance for the small tractor to grow up to husky efficiency than there is for the big tractor to shrink.

As for the influence of the tractor on the size of farms, that problem is likely to lead to endless speculation until we have gathered sufficient statistics to guide us. It is both a tractor problem and a man problem. It is a problem involving land tenure and types of farming. It is a mechanical problem and a livestock problem. It is likely to become one of our greatest farm-management problems. Furthermore it will become a social problem, as it will mean a still greater decrease in our rural population.

The efficiently mechanized farm of the future is something to look forward to hopefully, and I believe that the small tractor will be the greatest influence ever brought to bear toward this end, not only in the United States but in the whole world.

X

Design, Parts, Service—The Big Little Things

IF YOU happen to buy a simple little tractor, with only 11,000 pieces in it, you are in a fair way to acquire some fundamental experience in mechanics. The 11,000 pieces are not all parts, to be sure, or what are commonly called parts. Nuts, bolts, washers, lugs or spuds, pinions, cotter pins, radiator pieces, carburetor pieces, engine pieces, magneto pieces, pipes, tubings and joinings in the lubricating system, grease cups, oil cups, frame braces and rivets, wheel spokes, steering-gear pieces and innumerable odds and ends in the metal fabric make up the dismaying total.

A very small fraction of this total is working parts. Every piece will bear some specific burden of wear and tear, but a good many thousand pieces are indestructible so far as the life of a tractor is concerned.

Some time look over a tractor, an automobile or any other mechanical contrivance of necessarily complex fabric that has played out and been scrapped and you cannot help but be amazed at the number of pieces that survived intact. It is a good deal the same with the human anatomy. Even in the case of the centenarian whose vital spark has suddenly gone out there are innumerable tissues and bones and tubes that could, seemingly, have borne their burden for many

years were not the heart engine and its carburetor valves, the lubricating and the respirating system, played out.

A good many tractor prospects are asking: Where will we find the greatest simplicity in tractor design, the fewest pieces, the fewest parts? Unfortunately, there is no brief or comprehensive answer to this question. At this writing there are approximately 170 tractors, no two of them alike. In another year probably 200 or more, each a separate design, will be offered for sale.

There is such wide variance of design that classification is almost impossible. We have one-wheel, two-wheel, three-wheel, four-wheel tractors, caterpillars of several types, steel mules, iron horses, auto-plows and plow-autos, oil-gas and gas-oil, crude-oil burners, kerosene burners and gasoline burners. There are distinctive plow-pull types and distinctive all-purpose types, likewise special types for hauling; there are one-cylinder, two-cylinder, four-cylinder and six-cylinder tractors.

This great diversity of design is due primarily to the fact that there has not been sufficient experimentation to permit of careful analysis of the fundamentals of tractor design by tractor engineers. The early development of the tractor was confined to the plowing engine. Now, with the intrusion and immense popularity of the small tractor, there is a scramble in the direction of the all-purpose tractor. It is a mad, mad scramble.

To produce a satisfactory plowing tractor required a combination of certain elements. An approach was being made to simplification and standardization.

To provide a tractor combining in itself high excellence for plowing, cultivation, harvesting, road hauling and belt work required the addition of a great many elements not at all necessary in a plow-purpose tractor.

To get anywhere the all-plow tractor had to work up to deliver large units of power. The all-purpose tractor worked down to diversify and in that way to multiply small units of power. The all-plow tractor soon oversold its market; the all-purpose tractor, in the infancy of development, cannot seem to meet demand.

You must follow a precipitate decline from the 50,000-pound tractor to the 3000-pound tractor. Placed side by side they are about as alike as the zebra and the hairy mammoth. They are creatures of utterly different species. The big one- and two-cylinder tractors that have come down to date are fairly true to species. The "featherweight" is a hybrid cross with a predominating strain of automobile in him.

The big type was based upon stationary-engine practice. Its sponsers declare that any machine, to be a success at farm work, must be made heavy, to stand rough usage and continuous service. It must be heavy, to carry the single or double cylindered motors with large cylinder dimensions. The bearing surfaces must be large.

The transmission system is usually of rough-cast gears, of coarse pitch and large diameter. These gears, too large to inclose, must be run in the open. Frames and wheels must be proportionately heavy.

Carburetion, cooling and ignition systems are of the utmost simplicity, designed for practically constant

load and speed. Fine adjustment or flexible control is not considered.

It is argued for these big, crude fellows that they are more nearly fool-proof than any other type; that a one-cylinder engine gives half as much trouble as a two-cylinder, one-fourth as much trouble as a four, and one-sixth as much trouble as a six. In bygone days you heard this same argument from automobile manufacturers.

The fool-proof argument has very little force in this mechanized epoch as a selling argument. It is human nature to like to monkey with the buzz-saw.

The contention of designers of tractors built along automobile lines, that the use of single or double cylinders of large dimensions is incorrect for tractor duty because it is necessary to make the tractor "hopelessly" heavy to obtain proper wearing surface or bearing area has met pretty general popular approval. It makes its strongest appeal to the automobile-owning farmer. More than ninety per cent of the automobiles owned by farmers are four-cylinder light cars.

Unquestionably, however, the light-tractor advocates have been carried away by their own enthusiasm. They have too much of the automobile and too little of the tractor in their machines. That has already been pretty thoroughly demonstrated. The evidence is apparent this year, when you find most of the experienced tractor designers either bringing out or preparing to bring out tractors combining both the heavy type and the light type of construction.

The arguments for this interweaving of design are compromise arguments—an acknowledgment of the

good points of both designs. But even these compromise types have not followed any standard. Some producers of the heavy type merely cut down size and weight by using better materials where greater strength was necessary and applying anti-friction bearings where the loads were heaviest. Builders of "too-light" designs followed the opposite course, building up and strengthening, adding more power units to the motor.

The logical future development of the tractor will undoubtedly be along the line of combining the knowledge and experience of the agricultural engineer, the automobile engineer and the tractor engineer. Each class has much to learn. Some of the leading automobile engineers of the country are now employed in making a minute study of tractor mechanics and agricultural economics. Mere mechanical skill will not serve to produce any special ideal type of tractor. The agricultural engineer can furnish invaluable information concerning farm management, cropping conditions, soil textures, soil contours, the possibilities for replacing horses, the possibilities for the diversification of belt-power, and so on. One of the very best light tractors on the market was designed by a farmer turned mechanic.

The automobile engineers, seeking mechanical refinements, have already made a big impression by compelling the use of better building materials. Their influence is largely responsible for the growing use of cut and hardened gears, inclosed gearing run in oil and moderately light high-speed motors. There is both a positive need and an increasing demand for the

intensive use of high-grade materials, as well as for the development of design to take the utmost advantage of quantity production.

The great automobile manufacturers who are undoubtedly coming into the game will seek the broadest market. They have the mistakes of scores of tractor manufacturers to build upon; they have their own selling and exploitation organizations to wield as a powerful weapon of distribution—a much more flexible and effective weapon than has ever been used in the tractor and implement industries. How effective? Answer: Approximately one million automobiles sold to farmers who did not absolutely need them in their business. Sold for cash too—don't forget that!

XI

Building for Service

YOU will find in the tractor industry today two very distinct classes of manufacturers: One that is building for service and established reputation, and another that is building to catch the popular fancy. It should be worth while for the farmer to inquire carefully into the standing of the manufacturer. Do not simply ask the dealer or salesman a few casual questions. Write to your agricultural college. You may receive a noncommittal reply, but you will get a lead on the situation.

Simply because a tractor is a new design does not necessarily condemn it, but if it is simply a design fathered by a haphazard idea and you buy it the chances are all in favor of your paying a very heavy tax to prove or disprove the worth of that tractor.

The cautious tractor purchaser will make careful inquiry concerning the available supply of parts and their cost. The life of tractor parts is bound to be problematical. The wearing parts of a tractor bear a terrific strain. The least little negligence in taking care of lubrication may burn out a bearing or destroy a bushing. You want to know how soon you can replace these and at what cost. Fuel and water systems are far from infallible.

The bull gear carries a tremendous strain. There is a definite economic advantage when the bull gear is made up of several segments. You are not likely to have more than one segment go at a time and then the repair costs are but a fraction what they are if the bull gear is a single casting. Of course, the material of which the gears are made makes all the difference in the world.

But, by all means, look into every possible detail of parts service. A good many tractor manufacturers will supply you with parts catalogues. If the prices of these parts are not given, write for information. Check up with the dealer on the information you receive. Learn what parts he carries in stock and what he charges for them.

The catalogue put out by the manufacturer of one small tractor lists each separate part, its weight, price and the code name for it. Also there are special lists of magneto and carburetor parts. This manufacturer fixes the price at which the dealer handling his tractor shall sell parts, allowing a fair margin of profit to the man who keeps the parts in stock.

The dealer is not asked to keep all the parts listed in stock, by a handsome margin. How many and what parts he keeps in stock will depend to a large extent on the number of tractors he has sold. Generally he need carry only the working parts that bear the heaviest load and are the most liable to give way because of overloading, careless driving or accident. Defective parts are replaced free of charge by responsible manufacturers, provided the broken parts are sent on so the manufacturer may have proof that there was a positive defect in the material.

The dealer is not compelled to carry a heavy stock of parts at his own risk of never disposing of them. The manufacturer I have mentioned makes the provision that if any of the parts the dealer has carried are undisposed of at the end of the year he will take them back.

This sort of parts service is a big advance over the old-time methods in the tractor industry. Many a tractor owner, having broken an essential part, has written to the factory, only to find that a special casting would have to be made, and at almost prohibitive cost. Tractor owners have told me of paying twenty dollars and more for castings that with any adequate supply of parts on hand should not have cost more than a dollar or two at the most.

The dealer who is going to sell tractors to farmers cannot look too carefully into the details of parts service and repair service. The closer attention he pays to this the better will be his prospects as a tractor distributor. Many manufacturers are providing tractor schools for dealers and farmers. All the agricultural colleges are building up special tractor courses. Short courses in tractor mechanics will undoubtedly become immensely popular in the future.

There are alluring profits to be made in tractor sales by the dealer in the future, but this race is going to be to the swift, the energetic, the competent—to the man who makes a careful, detailed study of the tractor as a machine and who knows the value of this machine in the district he serves.

To those unable to attend tractor schools and short courses in tractor mechanics there are available

correspondence courses which, if they only whet the appetite for more knowledge, will have served a very useful purpose. The dealer should not only interest himself in all these special aids to his business as a tractor distributor, but he should urge the farmer who has declared himself a tractor prospect to equip himself with all the knowledge and skill he may obtain. The farmer, on his part, will do well to observe closely what the dealer knows about his product.

The newcomers to the tractor industry, who drove their selling forces into the market on the double-quick under the cash-sales banner, first chose the automobile dealer as a distributor.

The automobile dealer understood cash sales and he also knew the value of intelligent, dependable service, particularly parts service. The automobile dealer knew engine troubles, carburetor troubles, ignition troubles. The automobile dealer knew what service to give away and what service to charge hard cash for. He had not acquired the habit of giving away service to keep credit customers in good humor.

In the experimental drive for cash-sales distribution it was simply the natural thing to tie up so far as possible with the automobile dealer. But it wasn't long before there arose clamorous protest from the implement dealer. He came to the front in large numbers to present his just claims. He urged his manifest advantages over the automobile dealer in that he was in close contact with the farmer. He not only had personal acquaintance with the farmer, but he knew with some degree of accuracy just how much mechanical equipment the farmer carried, the size and kind of

farm he operated and the adaptability of his farm to absorb tractor power.

The old-line implement manufacturers who were selling tractors did not desert the implement dealer, but they were able to observe before very long that their implement dealers were in a great many—far too many—instances making a mess of their tractor sales. Likewise they were not meeting the competition in their district. New tractors made by "new beginners" were being sold under their noses in large numbers by automobile and other dealers, being sold for cash as against their abortive efforts to sell by the antiquated methods that still clung to the implement industry.

There was a division of responsibility for this. The implement dealer did not know the tractor, and the selling organizations he was distributing for were not coaching him properly. He was not getting live assistance from sales managers and branch-house managers. Implement manufacturers were making a vain endeavor not to disturb the sales of their other lines, but at the same time to push the sales of tractors. They did not have enough tractor specialists on the job. They neglected the parts service demands and needs. They neglected to boost the features that made the deepest impressions. Was it any wonder that certain competitors were rushing them off their feet?

In the course of a year radical changes were noticeable. Specialists and experts were hustled out on the job. The implement dealer was called into conference and instructed. He was taught more and more about the tractor as a machine and was coached to the limit in the process of selling for cash or the equivalent of cash.

At every dealers' convention held last winter there were lectures on tractors and indoor demonstrations of tractors, so far as that was possible. Kansas City had a big tractor show as an adjunct to the annual automobile show. This attracted both implement and automobile dealers. Minneapolis had a tractor show. The implement trade press broke out with a sort of tractor measles. Special tractor numbers were prepared for the sole purpose of coaching the implement dealer. Some implement trade papers changed their names to include "tractor."

A year ago one big tractor concern boasted that ninety per cent of its distributors were automobile dealers. Since then it has been signing up large numbers of implement dealers, until now it is a case of fifty-fifty, with the rising tide in favor of the implement dealer. But the implement dealer did not come in to skim this tractor cream on his own terms. He came in on the manufacturer's terms, and he is growing to like the business methods built up by the automobile industry more and more as the months go by.

An overwhelming demand for small tractors made this possible in the tractor industry, just as an overwhelming demand made it possible in the automobile industry. So far as I can see this demand is not likely to slacken for several years to come. It is more than likely to be the salvation of several thousand implement dealers who would have been ground out of existence in the course of competition as it existed in the old days.

The elimination of the unfit will go on, but there will be attracted to the dealer forces a much higher grade

of intelligence and business alertness than was ever the case before. The agricultural colleges are turning out hundreds of young men with technical knowledge of agricultural economics and mechanical engineering who will be attracted by the dealer possibilities of the tractor. More and more dealers will send up their sons for this training. A good many of the colleges have established courses in salesmanship. If you have a grain of optimism in your system you must see that the prospect is peculiarly rosy.

XII

The Horseless Farm

YOU might as well try to sum up the vagaries of womankind as attempt to cap a climax to a discussion of farm tractors during the industry's present spasms of regeneration, or rejuvenation, or recrudescence, or whatever you desire to call its 1916 labor pains.

I have been poring over scores of essays written by engineers and experts in hurry-up response to emergency appeals for copy, but they agree only on the score of their uncertainties. No, that is not exactly accurate. There is a harmonious tone to their optimism. The majority of them express themselves as scientific optimists. It has been denied that there is such a critter. Let me explain. When these technical specialists get away from the backing and filling of their technical discussion they step right up to the front of the rostrum and let go to this effect:

"Whatever happens, the tractor is here with bells on and going so fast you can't see it for sparks and smoke."

This is just a common kitchen-garden variety of hysteria, but when you see it develop in scientists you may gamble there is some good sound reason for it.

During the extensive tour I made through the tractor centers of manufacture and distribution I met a variety of types of enthusiasts—probably not all the types, but I believe a majority of them. One of the most interesting was the horse eliminator.

He was one of a force of 750 earnest workers employed in the experimental department of the biggest concern that makes tractors and farm implements. He was assigned to just one specialty and he certainly took that specialty to heart. It was a sort of one-cylinder, three-speed, no-reverse, direct-drive hobby. That preëminent hobby-horseman of English literature, Uncle Toby, was a chronic diversifier by comparison with this earnest, chubby little gentleman, who has given up the greater part of his life to contriving patents that should ultimately eliminate horse power from farming.

He was almost up to his neck in blue-print designs when I visited him in a Chicago skyscraper. Almost the first phrase he uttered was "horseless farm." In the next breath he told me he was no mere skyscraper theorist, but a real farmer. He lived on a farm—a horseless farm. It was part of his job to promote the horselessness of this farm.

He still kept a few horses—kept them round just for the sake of having them there to prove how easily he could do without them. Furthermore, he was figuring out to a nicety what these horses cost to maintain and just how much power they delivered in return for their upkeep. He had entered the purchase price of this work stock, estimated their depreciation to a hair day by day, worked out the average of horse ailments and

horse accidents on a large number of farms. He had balanced his horse quota as to sex so as to get the average returns from reproduction and its value, also he measured and estimated the value of manure return.

"I intend to play fair with the horse," he said, "and to get its value as high as the averages carry. Only by doing that will I succeed in driving myself at the top speed to replace the horse by diversified tractor service. I am working now on a great many patents for redesigning farm machinery and farm equipment so as to increase the utility of the tractor and make it earn dividends on an average small farm of 150 acres. The smaller the farm, the greater must be the range of activity of the tractor. We must drive toward the complete elimination of the horse to make the tractor a paying investment on the really small farm.

"We are redesigning our harvester as a small tractor harvester, so that we can take it off and utilize the transmission drive of the tractor as the drive of the harvester. I am working on no end of patents for a tractor cultivator. There are a good many snags in the way, but we are going to cut through them. We are redesigning our mowers, so as to put on as many sets of knives as the tractor will pull. We have worked out a header-separator for the grain districts.

"When we get our tractor cultivator worked out it will cultivate four rows with three men and then it will be possible to cultivate two or three times where we cultivate only once now. There will be no need then to cultivate any farther when the corn is so high as to interfere with tractor traction. The increased yields should be incalculable.

"In the course of my experimental work I have become a small tractor-fanatic. I do not see the need of large tractors at all. If more power is needed add more small-tractor units. I believe a six or eight drawbar pull will be all the power necessary in these small power units.

"Each small tractor will take care of one manure spreader, one harvester, one mower, one hay loader, one hayrack, and so on. The hayrack may be mounted on a two-wheel trailer. The trailer can be used to carry the grain to the carrier and the tractor will operate the carrier to unload. I have worked this out with potatoes, sugar beets, and many other crops besides hay and grain, by running the end of the carrier box into the car that is to be loaded. Can't you see that when we get this down pat the horse will be completely out of it? There'll be no use at all for animal power. We can begin in the spring with the manure spreader and work right through to the delivery of crops at the elevator or the freight car. All we have to do is to be sure that our small-unit tractor has power enough to operate all these various machines."

"What about the additional cost of labor for the additional small-tractor units?" I asked; then added: "It is quite generally urged that there is an important economic gain to be made in eliminating man labor. A plurality of small tractors on the farm will certainly call for a plurality of operators."

"That will be a mere trifle," he retorted; "when we have our readjustment down to a fine point and have eliminated the horse. The economies accomplished by each small-tractor unit will pay for the extra man labor

and leave a wide margin of surplus to spare. There is an immense amount of waste man labor on the farm today, due to horse labor. The small tractor will take care of that waste."

"The more small-tractor units the more farm machinery," I remarked. "What about the cost of doubling and tripling the number of machines? Isn't it true that the bigger the machine the less per horse power the cost of the power it delivers? Of course it would be better for the implement manufacturers to double up the number of machines, from manure spreaders to side-delivery rakes, hay loaders, and so on, but where will the farmer get off? He is already pretty heavily overpowered on the small farm."

"That is merely an assumption of the superficial economists. When a farmer has a number of teams of horses he must have a number of wagons, binders, mowers, and so on, for these teams to pull. If he buys a large tractor he can pull only one machine at a time, and must discard the smaller machines for larger ones. To employ these large machines he should have large fields to operate in.

"Now, say, a farmer takes on three $700 tractors instead of one $2000 tractor. Does he not add then a much greater elasticity to his farm operations? His small tractors can pull all his various equipment in fields of whatever size he cares to divide his farm. He can do infinitely more small work with his small tractors than he could with his big one."

"Then you don't give much weight to the argument that the average farmer is overequipped with machinery?"

"If he is, it is all because of the horse!" exclaimed the horse eliminator vehemently. "The horse is the great economic burden. I'll prove this to a hair. Just leave it to me."

I reckon we'll have to do just that—leave it to him, though I doubt if he will live to see the day when the horse is completely eliminated from the farm. Our Department of Agriculture has been working out this tractor versus horse problem, and one of the young men who has been gathering valuable farm-management material has this to say in defense of the horse:

"While power produced by mechanical means costs less per unit than that produced by animals, the difficulties encountered in its efficient application very frequently make the cost of performing mechanical power considerably greater than when done with horses.

"Many of the estimates published concerning the cost of doing farm work with a tractor are decidedly misleading, because they fail to take into consideration one of the largest items that constitute the total cost—that is, depreciation. Sometimes the depreciation cost is considered, but it is generally entered at too low an estimate and based upon the assumption that the life of a tractor is ten years. If this estimate were cut in half, it would be nearer the actual life of the tractor in its present state of development.

"Another thing—too often the average cost of work with horses is compared to the maximum possibilities of the tractor. If the maximum of tractor utility is used, the maximum of horse utility should be also used. Worked out on such a basis, it is my opinion that the horse would win.

"It is only fair to the horse to state that his capabilities are very inefficiently used by the average farmer. The average farm horse is employed only about one-third of the working days of the year, which makes his cost per hour much greater than it would be if he were employed throughout the year, as he must be fed whether working or idle.

"It should be noted, however, that the cost of feeding idle horses is about one-third less than the cost of feeding horses that are doing daily work. Yet you hear it stated almost generally as a tractor argument that it costs just as much to feed a horse when idle as when at work.

"While on most farms it is practically impossible to provide work for the horses during the entire year, it is quite possible to plan the work so as to use horses which must be kept a great deal more than most farm horses are used.

"Here is an important phase in that connection: You hear a great deal of the extensive use of the tractor for custom work. Now, while there are perhaps not so many kinds of custom work for which the horse can be used, in many sections of the country farmers would have little more trouble in finding profitable custom work for their horses than for their tractor.

"But it seems that a number of horses standing idle in the stable is a matter of small concern to most farmers, and no effort is made to find work for them to do off the home farm.

"But provide these same men with a tractor and they will frequently neglect their own farms to do work with the tractor for neighbors."

This is valuable as discussion and well worth digesting. But it is far from the final word for or against the horse. Conclusions drawn from averages are too often false conclusions, as Mr. Average Man is almost as difficult to find as Mr. Perfect Man. When you go out scouting for him you are bound to bump into one of the other fellows—James Above-the-Average, Esq., or plain Jim No-Account. One great trouble with experts and investigators is that they delude themselves into the belief that there is such a species as Bill Henry Average. If there only were, modern business could discard about fifty per cent of its complexities and perplexities.

The expert quoted above made a pertinent reference to the much-vaunted custom-work possibilities of the tractor. The appearance of the small tractor in great numbers is going to knock custom-work possibilities into a cocked hat and completely revise them.

XIII

Government Selection

CHOOSING a wife is nobody's business but your own. Butters-in are not invited to take part. You stand or fall by your personal choice.

Almost the same rule should apply to picking farm machinery or selecting an automobile. The vagaries that govern selection are very similar. Or, viewed the other way round, perfection standards are just as indeterminate.

The Department of Agriculture is continually bombarded with requests for advice in the purchase of farm tractors. In addition to this bombardment there is the steady inflow of demands for specific information concerning the relative values of a vast assortment of farm machines.

This situation applies not only to the Department of Agriculture, but to reliable farm publications as well. Every mail brings to these journals a considerable number of such letters.

The writers desire first aid and safe guidance in the choice of farm implements. The same writers would never in the wide, wide world dream of asking assistance in choosing wives, or even in picking out automobiles, sewing machines, pianos, or dining-room furniture.

Undoubtedly a great many citizens are baffled by the evasive and noncommittal replies they receive from Government officials and others they have come to regard in the light of experts. It is perfectly true that these replies rarely contain a sufficient explanation to account for their evasiveness. Very often they are perfunctorily curt or officiously snappy.

Though there is no excuse for this sort of rejoinder, there is ample excuse for not being able to tell the whole story and explain all the whyfores of refusal to give exact information concerning the relative value of an ever-increasing variety of farm machinery.

The purpose of this chapter is to tell the story in detail.

It is too generally taken for granted that inasmuch as the Department of Agriculture recommends or condemns certain seeds and passes upon the merits of foodstuffs, it should, logically, pass upon the merits of the various machines and implements offered to the farmer. But the matter of determining the relative merits of varieties of seeds is very different from that of determining the relative merits of different types and kinds of machines.

It is possible by careful tests of seeds to establish absolute and unchangeable facts, and it is perfectly safe to publish such facts.

But with a machine it is otherwise. A very slight change or readjustment may create the difference between bungling inefficiency and successful operation.

Take, for instance, a test in which two machines were put through a series of trials in which one fell

down and the other stood up. A few changes in the details of operation or construction of the superior machine might reverse the results. At the very next demonstration the inferior machine might be on top, and if you were an official who had condemned it on its first test, how much standing would you have a little later on when the product you condemned proved itself the superior of all rivals?

As a matter of fact, no competitive test of machinery can be considered final. It may be a simple thing to cast out a worthless machine, or an instrument that is fifty per cent shoddy and made for no purpose other than to sell on its appearance. But when implements and machines are backed by responsible manufacturers, of whom there are great numbers, and when the variation of efficiency is slight, it is a mightly ticklish question for the expert to guide the purchaser.

Take the case of stationary gas and oil engines. Approximately a million and a half of these machines are installed on farms today. Suppose a few thousand do not perform up to expectations. A few thousand kickers can make considerable clamor. Say they demand the appointment of a board of experts by the Government to pass upon the exact merits of stationary engines. What would this board face in the way of arriving at positive conclusions which would be of value to all prospective purchasers of stationary engines?

First, it should be the duty of this board to examine every type and make of engine offered on the market. Otherwise the best one, or possibly the poorest one, might be missed. There are 500 makers of gasoline

engines in the United States. They are scattered over an immense area. A great many of them make from ten to twelve sizes, and sometimes two or three grades of each size. A really comprehensive test would include several thousand engines.

Just consider the expense of making these tests, even though they were tests of very brief duration. And if they were tests of very brief duration, of what actual value would they be as tests? The purchaser of a stationary engine does not buy it to show it off for a few hours to his friends. He buys it for continued lasting service. The only way a board of Government, state, or otherwise constituted experts could render a fair test would be to take over the engine after it had come from the shop and run it till it wore out. And how many new and better types might come on the market during this interval?

The expense of such tests would be practically prohibitive. It is doubtful if the entire Federal Department of Agriculture as now constituted could, by concentrating all its energies upon a series of such tests, take care of all the kinds, types and varieties of implements and machines that are offered the farmer for sale.

The stationary engine is as near standard as any piece of farm machinery. Yet its performance is directly influenced by climatic conditions. There would be no end of a pow-wow over the selection of a central site for Government tests. If the first tests were made in a heavy, soggy atmosphere, that fact would have to be noted and allowed for. Manufacturers would clamor to have the tests made under ideal

conditions, with fuel of the highest standard. The judges of the tests would very likely not agree concerning what were ideal climatic conditions or ideal grades of fuel. Experts are as prone to disagreement as the common run of folks, if not more so.

It is estimated that if a central site for testing stationary engines were selected, it would cost at least $40,000 for the hauling of the engines to the testing site alone. No estimate is offered as to the likely cost of fuel, the possible charges to the Government for damage to machinery, the cost of renting or buying a site and the erection of proper testing shelters, the salary of official testers and supernumeraries.

Having begun with stationary engines, let us assume that the Government took on tractors, threshing machines, harvesting machines—all manner, sorts, types and varieties of tillage apparatus. We might even carry it down to garden tools and then to miscellaneous hardware. Before we got through we should have what would amount to practical Government control of every mechanical device.

Just the cost of diversified tests would run away up into the millions. The testing bureaus would become top-heavy branches of the Government. They would call for more experts than there were on tap in all the mechanical industries, and the natural sequence would be to fill the jobs with job-hunters, pork-barrel appointees, and so on. In no time at all we would be muck-raking the testers to learn from what manufacturer they were accepting graft.

To return to the mechanical intricacies of such tests: If each maker were allowed to prepare a special engine

for the Government test there would be no guaranty whatever that the machines sold to the farmer by that manufacturer would be of equal quality in either material or workmanship. To insure the obtaining of stock machines in every case selection would have to be made by a representative of the testing board, and just how the members of the board would cover the ground for this purpose would be an important problem by itself.

Here is still another little item that should make your puzzler spin: There would always be the possibility that the machine selected for the test might be an exceptionally good or an exceptionally poor one, for there is frequently a marked difference in the working qualities of two machines, even when made from the same lot of materials, by the same workmen and by the same tools. The only way to check up this phase would be to select at random two or three engines or machines of each kind and type and subject them to the specified try-out ordeal. This sort of thoroughness would still further multiply the number of machines to be tested and raise the cost of an official trying out to a dismaying total.

An expert in the Department of Agriculture, who was directed to make a careful study of the possibility of such tests, summed up the difficulties and objections as follows:

1. The work would involve enormous if not prohibitive cost.

2. Tests of many kinds of implements, unless made in the field and under actual service conditions, would be useless. Hay loaders, cotton pickers and potato

diggers are examples of such machines. Naturally the try outs would be confined to a limited season.

3. Unless the tests were made at very frequent intervals, it is quite probable that changes might be made in machines that had not previously come up to standard which would make them equal to any on the market, if not superior. For this reason no tests of machines could be considered as final, inasmuch as change could be made in design and material in a very short time, which might vastly improve the machine.

4. The recommendation of any particular machine would tend to create a monopoly, since it would increase the business of the concerns making the approved machines and decrease the business of less fortunate competitors, in the end, most likely, driving them out of business.

5. It is extremely difficult to carry out an absolutely fair and accurate test such as would be required on many of the different machines, because it would be practically impossible to keep testing instruments in uniform condition at all times. This fact was borne out in the competitive test of only a small number of farm tractors, held at Winnipeg, Canada, when the rope on the brake-drum would sometimes stick and cause the speed of the engine being tested to vary considerably. It was also demonstrated at a similar test that it was almost impossible to obtain a uniform grade of fuel.

6. It would be very difficult to find a sufficient number of competent men to conduct such tests—that is, men who had gained their proficiency from sources other than the employ of manufacturers. In that case

there would be a very strong likelihood of prejudice in favor of certain manufacturers.

7. There would be no assurance whatever that the machines placed on the market by any company would be equal in quality to those tested. Even though the maker desired to maintain quality standards, if his business were suddenly increased to a considerable extent, as would naturally follow in case his machine was recommended by the Government, it would necessitate taking on a large number of new hands who would not likely turn out so good a grade of work as the older and more experienced men.

8. It is also highly probable that the manufacturers whose product was recommended would take advantage of the fact to raise the price, thus causing the farmers to pay more for the machine than they otherwise would. Such a result would prove more of a burden than a blessing to the farmer.

9. In testing most types of machines, of which there are a large number, the tests of individual machines would necessarily last only a short time. This sort of testing would in no way determine the probable life of the machine, which is an essentially important factor. A machine that proved superior in a few hours' test might possess only a fraction of the life of competing machines.

10. The establishment and carrying on of such official test by the Government would undoubtedly hamper and embarrass the agricultural-implement industry, serving to keep off the market many experimental machines that otherwise might develop exceptional value. It should be mentioned in this

connection that the cost of developing a machine must be borne by the user, no matter whether it is developed by tests made by the manufacturer or in actual service. The manufacturer must naturally add the cost of experimental work to the selling price of the machines. Otherwise it would be impossible for him to do any experimental work.

The man who prepared this series of ten objections informed me that he could string the list out almost endlessly. There were separate and specific objections in the case of nearly every type of machine he had studied. The manufacturers, individually and in groups, could undoubtedly raise a great many objections that had not occurred to him.

This subject will become increasingly important as more and more mechanical power is developed on the farm. The farmer is really better off relying on his own judgment and experience than he would be if he relied upon superficial government tests. His opportunities for studying the other fellow's machines are constantly expanding, and very often his judgment and opinion are far superior to the judgment and opinion of many so-called experts who might, through pull or political preference, be appointed to a government testing board.

XIV

No Fixed Rules to Guide

WITH the big tractor, where there were broad areas of virgin sod to be broken, a tractor buyer could figure on making his tractor earn its way on off days. Tractor owners west of the Mississippi Valley reported that they could work their outfits an average of 100 days a year. These owners were located on farms that averaged 700 acres in size and their neighbors were ranchers who were eager to contract for sod-breaking.

But even this sort of custom work was as often as not unprofitable, particularly when there was any competition. Owners accepted the contract work at too low a figure, failing to make sufficient allowance for depreciation or repair charges and the value of their own time.

Getting down into Illinois, where there are very limited areas for sod-breaking of any kind, one hundred tractor-owning farmers found that they operated their tractors on an average of forty to forty-five days a year on their own farms and that their contract work did not run above fifteen days' service. This gives a total of not more than sixty days a year. The farms from which these reports were obtained averaged about 400 acres in extent.

Careful consideration of this feature has guided a good many manufacturers in planning to diversify the utility of the small tractor for actual home-farm work. This is the only logical plan for any look-ahead tractor maker. Every additional tractor in a district diminishes the possibilities of contract work.

The staffs of experts now employed by at least a score of tractor makers are making a close study of all these angles and phases so vitally important to the future expansion of the industry. Manufacturers are pretty generally requesting all their customers to keep tabs and close accounting on their tractor work and to send in detailed reports at the end of the year.

Some of these first-year reports are being used for advertising purposes; but the farmer who reads them in the form of advertisements should reckon that the undesirable chaff—for boosting purposes—has been sifted out. He should consider further that some of the reports were prepared by farmers who are getting a rake-off as agents for the tractor. Still further, he should read them in the light of first-year reports.

If your tractor is promised to give you at the very lowest not less than five years' service, a first-year report on its cost of operation is not nearly so important as a second-year report. The farmers who run automobiles need not be advised about this.

It would be a fine thing if someone could lay down a little table of inflexible rules to guide the farmer in the purchase of a tractor. But it can't be done. Any advice you offer must be flexible. It would be a good deal the same as giving young men advice about marriage. Ben Franklin did and he was a great philosopher.

He advised the choice of spinsters. But if you urged a young chap who preferred raven-haired brunettes to choose a strawberry blonde, he'd follow the inspiration of his preference and tell you to go hang with your advice.

So, if you advise a farmer who has formed a preference for three-wheel tractors that he would better purchase a four-wheel tractor, or a bull-wheel-in-the-furrow tractor, or a caterpillar, or a steel zebra, or something else, he will immediately conceive that you have some ulterior purpose in plugging the "wrong" tractor.

If you figure out for him that a kerosene burner will save him fifty per cent in fuel cost he will retort that a gasoline burner has fifty per cent superior efficiency and will get him through his work in high gear. Then, to give specific advice to a tractor prospect demands that you have specific knowledge of that man and his farm. These are indispensable items of knowledge in forming judgment.

There are at least a score of tractors I should like to recommend on the general principle of their mechanical excellence, but if the wrong man with the wrong farm got hold of one of these on my advice and then bungled its operation the result would be unfortunate all around.

The farmer must work out his tractor preferences for himself by careful study and observation, as he has worked out his preference in choosing his farm, devising his farm management and adding his equipment. If he can increase both his theoretical and practical knowledge of mechanics, so much the better.

Efficiency in operation of the tractor, whether it be a small or a large one, is indispensable to its successful use on the farm, and no man may operate a tractor with anything approaching complete success unless he keeps painstaking account of operating costs. Fuel economy has become increasingly important within the past year, as the price of gasoline has soared.

There will always be some uncertainty, from season to season, concerning the probable cost of engine fuel and lubricants. There can be no uncertainty about definite economies in fuel consumption due to careful operation. The operator who does not understand carburetion and ignition cannot hope to accomplish fuel economies. He must watch for carbon in his cylinders and keep them clean; he must watch his spark plugs, learn how to adjust his carburetor so as to obtain the most effective and at the same time economical mixture. Likewise he must devote the same keen, unflagging scrutiny to his lubrication. If he allows any of his wearing parts to run dry he may do more damage in a few minutes than a year's fuel economy would pay for.

There is fully as much, if not more, waste from the careless operation of machinery than there is from normal wear and tear. You hear tell of fool-proof tractors, but there are really none such. Nor will there ever be, no matter what the engineers of the future accomplish in simplification and refinement of material. Risks and dangers may be reduced, but they will never be eliminated. The too-fussy mechanic may be a joke among his neighbors, but to the man who sells him machinery he is a shining light and a guiding principle.

The idle tractor may not eat its head off, but it demands constant grooming, faithful and methodical overhauling. The successful tractor farm of the future, which, I believe, is going to be the pacemaking farm, the leadership competitor in practically every farming area in America, must have its shelter shed for all its farm machinery and an adequate repair shop, rather oversupplied than undersupplied with tools and equipment.

And the operator of that farm must, in the nature of things, become a skillful mechanic and a hard-headed bookkeeper. There is a new dignity, a new interest and a new zest to this sort of farming. It will tend to eliminate drudgery and it will also tend to raise the average of intelligence, but it will not in any sense make farming a soft snap or a kid-glove avocation.

The farmer's son who abhors dust and grime and sweat would better keep right on up the highway to the city. Neither electricity nor the internal-combustion engine will provide him with the cotton-wool wrappings he yearns for. But for the farmer's son who is merely ambitious to become modern and progressive, to keep in touch with the live events of the times, the tractor will furnish an interest greater than any one thing that has been brought to agriculture since the days when barbarian slaves were shackled to the yoke of wooden plows. And the time is coming in the next decade or two when every farm in the United States that is a real farm will own its tractor and its automobile too.

This may seem like a long stretch of vision in view of the fact that there are today some 6,000,000 tractorless

farms and not quite 1,000,000 automobiles in the rural districts. But when you have seen a tractor operate in a four-acre greenhouse in Northern Ohio; a tractor pulling a four-furrow plow aslant Georgia's red-clay hills; caterpillars operating successfully in the sandy plains of Virginia and the Carolinas; a steel mule forging its way through slimy Louisiana swamps; tractors grubbing sage in Colorado, Idaho and Utah high altitudes; caterpillars operating on the tule islands of the San Joaquin Delta and breaking sod for rice culture in Texas, Louisiana and California; whole squadrons of tractors tilling the grain prairies of Kansas, Nebraska and the Dakotas, you begin to get a magnificent view of the future possibilities of applied mechanical power on the farm.

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